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UNC MEDICAL BULLETIN
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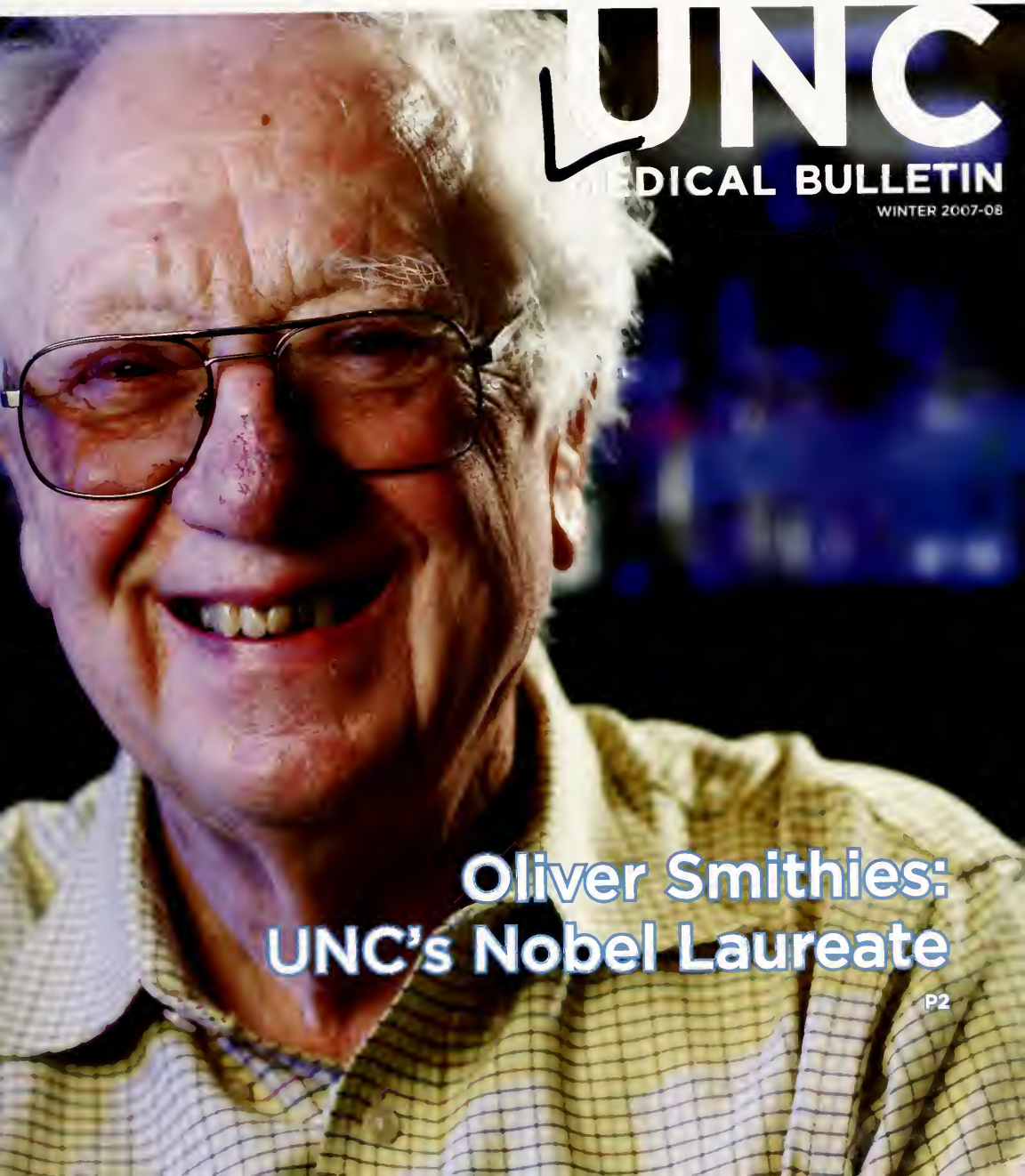

Oliver Smithies: UNC's Nobel Laureate

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Creating a CAROLINA LEGACY

Photo by Lee Salem

DENMAN AND POLLY HAMMOND

A Full Circle

HAMMONDS CONTINUE CAREER-LONG CAUSE WITH PLANNED GIFT TO UNC LINEBERGER COMPREHENSIVE CANCER CENTER

WHEN DENMAN HAMMOND '44, '46 (CMED) and his wife Polly wanted to make a planned gift to help combat childhood cancer, they chose the place where his career began: UNC-Chapel Hill. Their $1.3 million gift to the Medical Foundation will allow UNC Lineberger Comprehensive Cancer Center and its pediatric oncology program to make large strides in research to better understand and treat cancers that affect the smallest and most vulnerable of our population.

"POLLY AND I HOPE that the proceeds from our charitable remainder trust will assist in supporting outstanding specialists to advance research, care and teaching to benefit children and adolescents with cancer," Hammond said. The Hammonds transferred stock to the trust and designated UNC Lineberger as the charitable beneficiary. The trust pays the Hammonds income during their lifetimes and at their deaths will provide financial support for UNC Lineberger. "We have been very pleased with our decision."

HAMMOND'S CAREER in medicine was recognized by UNC in 1994 when he received the UNC School of Medicine Distinguished Service Award for his professional service and leadership accomplishments. Hammond was the founding director of the University of Southern California Comprehensive Cancer Center, the founder, past president and CEO of the National Childhood Cancer Foundation; a member and principal investigator of the national Children's Cancer Group (CCG) for 11 years at Childrens Hospital Los Angeles, and thereafter served for 24 years as group chair. He authored or co-authored more than 300 scientific manuscripts and book chapters, and served as a national director and officer of the American Cancer Society.

"DENNY AND POLLY are committed to our vision to have UNC Lineberger become a national leader in curing childhood cancer," said H. Shelton Earp III, the center's director. "Denny knows first-hand that great strides have been made, but research on childhood cancer remains a critical need."

If you're interested in creating your Carolina legacy, please contact Jane McNeer, vice president of The Medical Foundation of North Carolina, Inc., at 919-966-3946 or 800-962-2543 or Jane_McNeer@med.unc.edu. You may also contact Candace Clark, associate director of planned giving, at 919-962-3967 or 800-994-8803 or createalegacy@unc.edu.

The *Berryhill Society*

THE UNIVERSITY *of* NORTH CAROLINA *at* CHAPEL HILL

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ON THE COVER

Oliver Smithies, geneticist, Carolina's first Nobel Laureate. See story on page 2.
Photo by Brian Strickland

Scientist, Scholar, Mentor:

UNC's Smithies claims Nobel Prize

From the comfort of his chair, Dr. Oliver Smithies looked out at the assembled throng of photographers, reporters, camera crews and well-wishers and said, "I think I am going to sit. I'm ancient."

But the crowd assembled at the October 8 news conference and celebration at the Lineberger Comprehensive Cancer Center insisted that the 82-year-old Smithies stand at the lectern so his words could be broadcast on the evening news.

Smithies happily obliged, but maybe someone should have suggested that he take a bow, too. After all, it is not every day that you wake up to a 5 a.m. phone call from Stockholm with the news that you have just won a Nobel Prize.

Smithies, Excellence Professor of Pathology and Laboratory Medicine at the School of Medicine, is a co-recipient of this year's Nobel Prize in physiology and medicine along with Mario R. Capecchi of the University of Utah's Howard Hughes Medical Institute and Sir Martin J. Evans of Cardiff University in the United Kingdom. They were honored for their pioneering work in the 1980s using mouse embryonic stem cells to create animal models of human disease.

Smithies displays his Nobel Prize while in Stockholm last December.

The research technique they perfected is used to silence, or knock out, functioning genes in mice and replace them with a flawed counterpart to replicate human disease.

Martin used special cells extracted from early-state mouse embryos to deliver the modified genes. He injected these cells into mouse embryos to create offspring with changes to their DNA that would be passed on to future generations.

Meanwhile, Smithies and Capecchi targeted genes through a process known as "homologous recombination." Homologous means that the introduced DNA sequence lines up with a mirror target sequence in the mouse chromosome. Recombination means the incoming and target sequences break and then rejoin.

The two lines of work came together in 1989 when homologous recombination in embryonic stem cells was first used to generate knockout mice. Gene targeting has been further perfected over the years, and it is now possible to introduce inactivated genes that can be

Oliver Smithies, UNC's first Nobel Laureate, addresses the press during a press conference held at the Lineberger Comprehensive Cancer Center on October 8.

switched on at specific times or in particular cells or organs.

Scientists worldwide use this method to decipher disease, devise treatments and explore yet-to-be-solved mysteries of the genetic code. Knockout mice have been used as a model for cystic fibrosis, heart disease, diabetes, Parkinson's disease, Alzheimer's disease and cancer.

According to the Nobel committee, "gene targeting in mice has pervaded all fields of biomedicine. Its impact on the understanding of gene function and its benefits to mankind will continue to increase over many years to come."

Chancellor James Moeser said Smithies' innovations have helped millions of people worldwide live better and longer lives.

"For decades, he has embodied the very best of academic research and humanity through his modesty, good humor, creativity and love of invention," Moeser said.

"Through his example, hundreds of students and colleagues have learned how to help the world through research."

Knocking out genes

During the news conference, Smithies revealed a natural grace and modesty and a gift for translating the complexity of his work into terms most people can grasp.

"If you can imagine a book with a thousand pages and a thousand letters on every page, you would have to have more

Carolina Ties to the Nobel Prize

Oliver Smithies, PhD, is the first full-time Carolina faculty member to win a Nobel Prize. Other Nobel winners with ties to UNC are:

Peter Agre, chemistry, 2003:
Fellow, hematology/oncology, 1978-1981
Agre isolated a membrane protein that serves as a channel to transport water between cells. This discovery opened the door to a whole series of biochemical, physiological and genetic studies of water channels in bacteria, plants and mammals. Today, researchers can follow in detail a water molecule on its way through the cell membrane and understand why only water, not other small molecules or ions, can pass.

Robert F. Furchgott, physiology or medicine, 1998:
Alumnus, BA in chemistry, 1937; honorary doctorate, 1984
Furchgott shared the prize with Louis Ignarro and Ferid Murad. Furchgott's research into blood vessel walls led to discoveries about smooth muscle cells and the molecule EDRF, the endothelium-derived relaxing factor. This discovery was key in the development of the drug Viagra.

Louis Ignarro, physiology or medicine, 1998:
Honorary doctorate, 1984
Ignarro shared the Nobel with Robert Furchgott and Ferid Murad. His work complimented Furchgott's and found that EDRF was identical to nitric oxide. This revealed that a gas can act as a signal molecule.

Martin Rodbell, physiology or medicine, 1994:
Former adjunct professor
Rodbell's work was in G proteins and discovering the "universal signal" telling cells how to communicate properly. He was invited to become an adjunct professor in the UNC biochemistry department in 1987.

Rudolph Marcus, chemistry, 1992:
Post-doctoral fellow, 1951; faculty, 1951-1952
Marcus was rewarded for his theoretical work on electron transfer, which has greatly stimulated experimental developments in chemistry. The Marcus theory describes, and makes predictions concerning, a wide breadth of chemical phenomena.

Gertrude B. Elion and George H. Hitchings, physiology or medicine, 1988:
Former adjunct professors
Elion and Hitchings shared the Nobel Prize with Sir James Black for their research leading to drugs combating AIDS, herpes, leukemia and malaria. Elion and Hitchings worked at Burroughs Research Laboratories in Research Triangle Park and were adjunct professors at the UNC School of Medicine. They served in the department of pharmacology for 11 and five years respectively. Hitchings also received an honorary doctorate in science degree from UNC and a Distinguished Service Award from the UNC School of Medicine. Hitchings died in 1998; Elion died in 1999.

than a thousand of these books in order to write down the genetic information in the human genetic apparatus," he said.

In fact, Smithies said, you would have to have more than 3,000 of these books to record every piece of information about the human genetic constitution.

"So what Mario Capecchi and Martin Evans and I have contributed to that is to say, 'Well, Volume 322 looks rather interesting and on page 960, what's that word doing three lines from the bottom and two over from the right? What does that word tell us?' What our technique allows is that we can alter that word or take it away and ask what happens."

In this same manner, other scientists can learn what the whole page says, and eventually the entire genetic material of an animal before applying that knowledge to advance human health.

Smithies also compared the scientists' work to discovering the use of an automobile part by removing it. Remove an overhead light bulb, for example, and the only effect is a dark car. Take away the steering wheel or the front tire, though, and the result is more dramatic.

By knocking out a gene, scientists can discover what it does and whether it is indispensable.

Smithies said much of his breakthrough work in 1989 was done here at Carolina. He came here the year before from the University of Wisconsin at Madison. Since then, the usefulness of the gene targeting technique has continued to expand.

"Now you can't open a scientific journal without finding people who have used this method," Smithies said. "It's quite a marvelous feeling having been involved in that work, but it doesn't stop."

The phone call from Stockholm was not a complete surprise, Smithies said. After he, Capecchi and Evans were co-recipients of the 2001 Albert Lasker Award for Basic Medical Research, the prospect of a Nobel seemed within reach. The Lasker Awards have been called "America's Nobels," and many researchers who have won them had gone on to receive the Nobel Prize.

As the years passed, Smithies admitted that he

began to doubt whether his name would be added to that group. But he said: "When I got that proverbial phone call from Stockholm this morning, there was rather a feeling of peace."

Still, Smithies emphasized that the real reward is the everyday pleasure of working in his laboratory. He said he hoped the award would not change his life at all. "I rather enjoy it as it is," Smithies said. "If it's not broken, don't fix it."

A born inventor

Born in 1925 in Yorkshire, England, Smithies as a young child enjoyed building telescopes and radios. He won a scholarship to Oxford University, where he earned a bachelor of arts degree in physiology in 1946 and a master's degree and doctorate in biochemistry in 1951.

In the 1950s, while at Connaught Medical Research Laboratory in Toronto, Smithies greatly improved gel electrophoresis, a process of separating proteins to identify genes using starch. The innovation simplified the procedure and became standard in laboratories.

Smithies came to Carolina in 1988. His lab focuses on developing animal models for studying gene therapy in hypertension and other genetic disorders, including sickle cell disease. He is a member of UNC's Lineberger Comprehensive Cancer Center.

"Scientist, scholar, mentor—Oliver Smithies adds Nobel Laureate to a long and glorious career," said William L. Roper, dean of the School of Medicine, vice chancellor for medical affairs and chief executive officer of the UNC Health Care System. "It gives us great pleasure to say congratulations on achieving this wonderful honor."

A lifelong inventor, Smithies said that scientists should have three things in

CONTINUED ON PAGE 9

Top photo: *Applause greets Smithies as he enters a reception held in his honor at the Lineberger Comprehensive Cancer Center on October 8.* Bottom photo: *Smithies is presented the Order of the Long Leaf Pine by North Carolina Governor Mike Easley during a ceremony at the State Capitol in Raleigh on October 16. Order of The Long Leaf Pine is presented to individuals who have a proven record of extraordinary service to the state. The Order of the Long Leaf Pine is the state's highest civilian honor.*

Growing Pains

A shortage of pediatric specialists across North Carolina means children get sicker while they wait. UNC, in cooperation with other tertiary care centers statewide, is working to change that.

BY ANGELA SPIVEY

When **Lumberton Children's Clinic** physician assistant Tim Bell wants to refer a child to a pediatric gastroenterologist, he must tell the family they face at least a six-month wait for an appointment. In the meantime, Bell and his colleagues in the Robeson County, NC clinic do their best to manage the child's condition locally. But the waiting and multiple office visits involved can frustrate patients and overwhelm the local clinic. This is especially true at smaller practices, but it happens even at the larger clinics like Lumberton.

"Even though we're available 24 hours a day, seven days a week, patients will still seek care in the emergency room," Bell says. "And you start losing continuity of care because their conditions aren't being managed fully," he says.

The sheer numbers of children who need subspecialty care, coupled with a shortage of pediatric subspecialists, adds up to a problem for North Carolina, says Alan Stiles, MD, professor and chair of pediatrics at the UNC School of Medicine. "Remember, the state's grown 30 percent in the past five years. So we've got a vastly increased population," Stiles says. "And somewhere around one out of five children will need to see a pediatric subspecialist at some point during their childhood, some continuously."

North Carolina has only 25 percent of the national average number of subspecialists per child. "Also, for the population, we are short on the number of tertiary care beds for children who have chronic or serious illness," Stiles says. The shortage causes long waits and frustration for both doctors and patients. Ultimately, the quality of care suffers because of these difficulties.

Improving Pediatric Access through Collaborative Care (IMPACC), a collaboration developed by North Carolina Children's Hospital, the University of North Carolina at Chapel Hill, and NC Medicaid, works to address these problems. It links primary care physicians to pediatric subspecialists and thereby coordinates care for children. NC Medicaid participates through its Community Care of North Carolina and AccessCare programs, which are networks of primary care providers that use case management to improve care for Medicaid patients.

The consequences of waiting

IMPACC works to solve problems caused by the subspecialist shortage that lead to both declining patient outcomes and increased costs.

While a patient waits weeks or months to see a subspecialist, any number of situations can culminate in an emergency room visit, says Steven Wegner, MD, JD, president of AccessCare. A patient's condition can decline and they can end up in the hospital, which could have been avoided if the patient had seen a specialist earlier. Frustration, either on the part of the patient or the primary care pediatrician, can also land a patient in the emergency room. General pediatricians can sometimes spend hours on the phone trying to find an appropriate specialist, or a specialist who will see a Medicaid patient. "If the patient is really sick, and I don't have a contact with a specialist, and I don't know what to do, I will say 'Okay, you will have to go to emergency room at UNC and someone there will take care of you,'" Wegner says.

In other cases, Wegner says, while waiting to see a subspecialist, a patient actually improves, and by the time the specialist appointment rolls around, the patient has forgotten about it. The specialist ends up with a no-show. "That's another waste of resources," Wegner says. "It happens particularly in disease states where we see a lot of unnecessary referrals; for example, constipation."

Training those closer to home

To prevent such situations, IMPACC explores options such as the recent case management pilot program for children with type 1 diabetes.

A 2001 survey showed that North Carolina has only 19 pediatric endocrinologists. For many families, seeing one of them means a full day of driving. In general these specialists are clustered in academic medical centers and private practice in Chapel Hill, Durham, Raleigh, Winston-Salem, and Greensboro, says Ali Calikoglu, MD, associate professor of endocrinology at UNC and lead investigator of the pilot program.

With pediatric endocrinologists too busy and too far away to manage day-to-day care, the task falls to local physicians and the child's family, because managing diabetes is achieved mainly through managing diet and lifestyle. "Because diabetes care involves aspects of the patient's whole life, we knew that one visit in the hospital would not solve all the problems," Calikoglu says.

So the IMPACC pilot program tried using case managers to help the people who cared day-to-day for children with uncontrolled type 1 diabetes. All of the patients who participated in this program had hemoglobin A1C levels (a marker of diabetes severity) that were greater than 8.5.

A solution for short stays

Sick children face not just a shortage of doctors, but also a shortage of places in the hospital. "The whole state of North Carolina has a shortage of beds for children who are seriously ill," says Alan Stiles, MD, professor and chair of pediatrics at UNC School of Medicine. "There are just too few beds with the right kinds of physicians and nurses to care for these children. If the NC Children's Hospital is full, usually the rest of the hospitals in the state are also full."

Alan Stiles, MD

That can mean children who need specialty care may have an extended stay at a community hospital or get treated in the emergency room until they can get the care they need. "That is certainly not the way we want a child's care to go," Stiles says.

NC Children's Hospital is offering one solution: a Children's Short Stay Unit, which opened on January 23, 2008. The eight-bed facility on the first floor of NC Children's Hospital serves children who need procedures that require observation or other care for longer than a couple of hours but less than 24 hours.

"Our intention ... is to use the facility primarily for patients who have had surgery or other procedures and whom we expect to have a relatively short stay," Stiles says. Later the facility may also accommodate patients in other situations, such as when a patient needs a 12-hour medication infusion or must have blood drawn multiple times over several hours.

"We'll ultimately begin to add in other types of patients as we get experience with this," Stiles says. "We have a lot of patients in general in all health care systems who would be able to be cared for and sent home within a 23-hour block. We're working to do anything we can to provide access for patients who need to be here."

Patients in a control group received their regular care, and those in an intervention group were assigned to case managers who were registered nurses or social workers based in a nearby primary care provider's office.

These case managers observed the patients at home and at school, then trained the people who cared for the child, such as parents, grandparents, or teachers, to help manage the child's diabetes.

"The case managers also helped us mobilize the local resources, including primary care physicians and local support organizations," says Calikoglu, who offers a satellite clinic in Wilmington that serves patients from that area as well as Jacksonville, and even some from South Carolina.

In addition, the case managers periodically faxed blood glucose measurements to the tertiary care center so the endocrinologists could make decisions before each child came to the hospital for another visit.

"The case manager also served as a kind of relay station between the tertiary care center and the patient," Calikoglu says.

In the intervention group, the average hemoglobin A1C at the beginning of the program was 10.3. By the end of the six-month pilot program, those patients' average had dropped to 9.5. The change was clinically significant, Calikoglu says.

"Each one-point drop in hemoglobin A1C reduces by 30 percent long-term complications of diabetes such as eye and kidney problems," he says. "So in that six-month period we were able to make a significant impact on those patients. By no means had they reached the desired goal, but they had made progress."

> IMPACC works [because] the state's five medical centers, and a regional medical center, which may normally see themselves as competitors, work together.

At the conclusion of the program, the average hemoglobin A1C for patients in the control group was 9.7, essentially unchanged from the 9.9 they showed at the beginning.

Reducing the costs of care

IMPACC's most important goal is improving care, but it's also about making better use of scarce resources—in other words, saving money. In another study, the program demonstrated a large savings when primary care doctors consulted with specialists by phone before making a referral.

The subspecialists and primary care physicians reported when services were avoided, such as an emergency room visit, a full visit with the specialist, or a hospitalization, as a result of a phone consultation. The researchers are now verifying the information by looking for claims in the Medicaid database. A preliminary analysis doesn't show claims for services that specialists reported as avoided.

In a sample of 163 phone consultations, specialists reported avoiding $493,958 in services. If specialists are paid $40 per phone consultation, the resultant savings are more than $481,000.

"Telephone consultation works; we know from a cost perspective that it's helping us significantly," Stiles says. "For every dollar we put into the program, we saved $40. That cost savings is purely in charges for care. That doesn't count savings in travel costs to the patient's family, for instance."

Bell views telephone consultations as a solution with potential.

"If done right, phone consultations could not only reduce costs but also reduce some unnecessary referrals," he says. "The doctors and specialists can come to an agreement over the phone as to whether the patient needs to be admitted for specialty care. We feel there's a lot of referrals that clog up the system that could be handled at the local level."

An example is constipation, which usually can be managed through diet and lifestyle, Bell

says. Patients with this condition often get referred to a specialist, he says, because general practitioners don't have the luxury of taking the time required to educate the patient on changing his or her lifestyle.

A medical home

When patients do visit a specialist in person, lack of planning can lead to an unproductive appointment or unnecessary tests.

"Data has shown that 50 percent of the time, a patient arrives at the specialist with incomplete information or no information," Wegner says. "Then the specialist has to call labs, try to find x-rays or history reports. Sometimes they can't find them, and they have to repeat tests. So an unnecessary procedure is performed on the child."

The reverse can also be a problem; when the child returns home, the primary care doctor has no record of what occurred at the specialist appointment.

"We're trying to develop a model for changing that," Wegner says. "Ultimately we would want to create appropriate registries or medical records that could follow the patient, so that the generalist and the specialist could have access to it from a secure site."

At the heart of IMPACC is the idea of a medical home, in which one physician, usually a primary care provider, coordinates all of a patient's care, including visits to specialists.

"The primary care doctor and the specialist have an agreement that the primary care doctor may be responsible for some things, and the specialist may be responsible for others, and they may share responsibilities for other areas," Wegner says. "We're encouraging physicians to do this somewhat formally in a letter of understanding."

The US Department of Health and Human Services, Health Resources and Services Administration's Maternal and Child Health Bureau (MCHB), which has been developing the concept of a medical home for years, has singled out IMPACC as a national focus project.

"They have given us access to consultants to help us with some of our work," Stiles says. And, for the past two years, Stiles and Wegner have been presenting IMPACC's work to a working group formed by MCHB.

Stiles says that one reason IMPACC works is that the state's five academic medical centers and a regional medical center, which may normally see themselves as competitors, work together.

"I think medical centers have viewed coordination of care as a real challenge because of manpower and cost issues and the geography we have in this state," Stiles says. "The key has been that all of these people at other centers are willing to get together and do this cooperatively."

Oliver Smithies wins Nobel Prize

Continued from page 5

their lives to be happy: their work, a hobby and a family. Smithies is married to UNC colleague Nobuyo Maeda, Robert H. Wagner Distinguished Professor of Pathology and Laboratory Medicine. He also is a licensed airplane pilot and is especially fond of gliding.

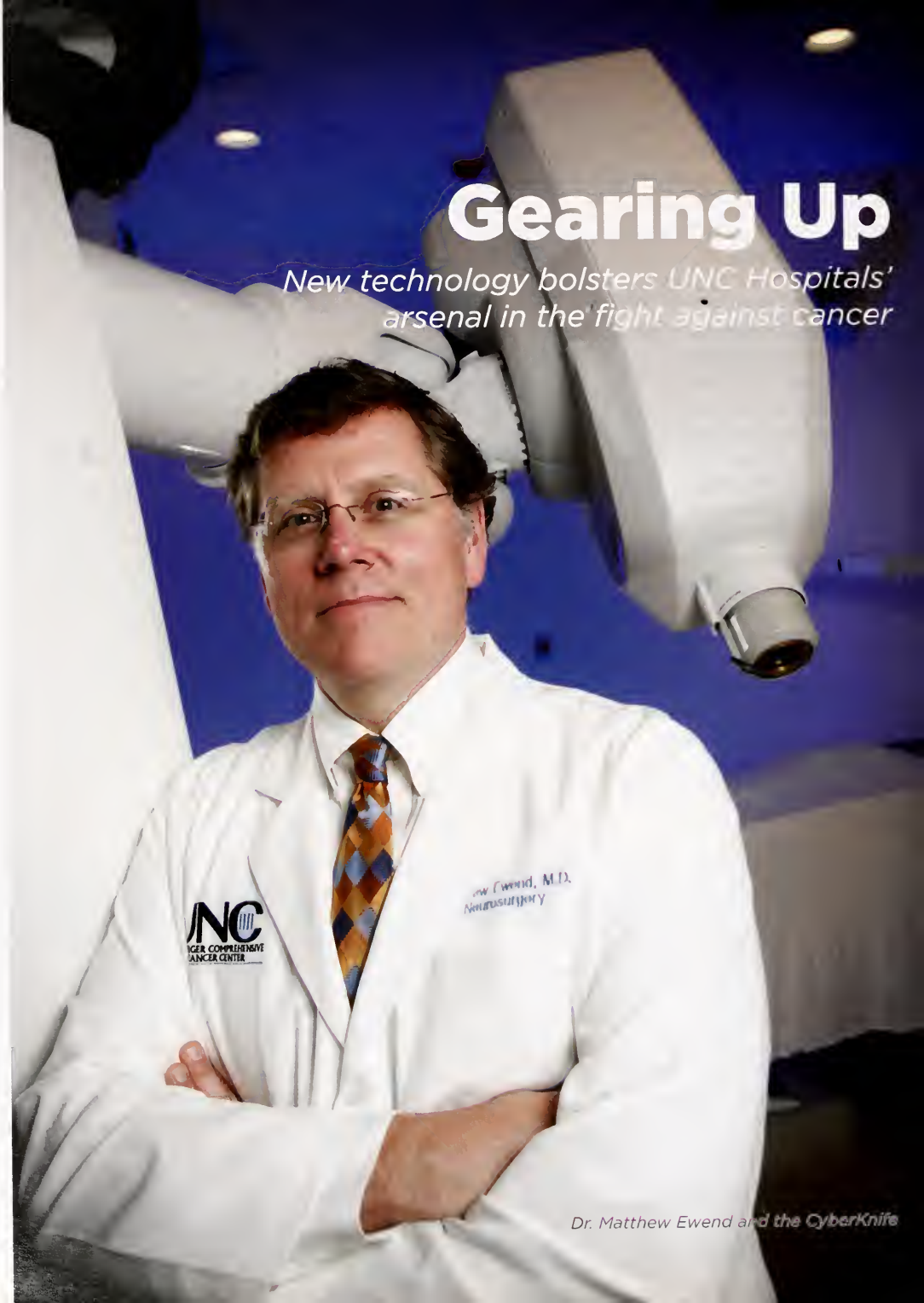
After winning the Lasker six years ago, Smithies talked about the nature of science. "I think it's rather like being an artist," he said. "You are making something from nothing often. You are creating a vision in your head and putting it down in the experiment. It's a composition."

Smithies received the Nobel Prize on December 10 in a ceremony at the Stockholm Concert Hall in Sweden. To watch a video of the ceremony, visit nobelprize.org/award_ceremonies/ceremony_sthlm/video/2007/index.html. To see a copy of an ad the university placed in *The New York Times* congratulating Smithies, visit www.unc.edu/chan/SMITHIES.pdf.

The preceding story originally appeared in the October 17, 2007 issue of Carolina's faculty and staff newspaper, University Gazette. *In January, Oliver was named the first-ever recipient of the Kay M. and Van L. Weatherspoon Eminent Distinguished Professorship in the School of Medicine.*

Gearing Up

New technology bolsters UNC Hospitals' arsenal in the fight against cancer



Dr. Matthew Ewend and the CyberKnife

Last August, UNC Hospitals' Radiation Oncology Department began treating patients with its new CyberKnife robotic radiosurgery system, a groundbreaking medical device that will allow surgeons and radiation oncologists at UNC Hospitals to treat tumors anywhere in the body non-invasively and with sub-millimeter accuracy. With that, UNC Hospitals became the first medical center in North Carolina's Triangle region to have a CyberKnife Program. One month later, UNC Hospitals announced that it had become the first large tertiary medical center in North Carolina to completely eliminate screen-film mammography in favor of newer digital breast imaging technology. UNC Health Care, with its addition of these new high-tech weapons, has significantly upgraded its arsenal in the fight against cancer.

Introducing the CyberKnife

Part of a $4 million expansion of the Radiation Oncology Department, the new CyberKnife Program is the first in the Triangle region and only one of 65 in the US. It is one of only four placed at a National Cancer Institute-designated Comprehensive Cancer Center.

"We have been performing radiosurgery at UNC for more than 15 years, but have been confined to treating tumors in the brain until now," says Matthew G. Ewend, MD, chief of neurosurgery and leader of the UNC Lineberger's neuro-oncology program. "It's a great step forward for our patients. We are now able to offer minimally invasive therapy to patients who previously had either no or only high-risk treatment options."

The CyberKnife consists of a lightweight linear accelerator mounted on a robotic arm. Near real-time images allow for patient movement tracking within one millimeter spatial accuracy. The CyberKnife references the position of the treatment target to internal radiographic features such as the skull, bony landmarks or implanted fiducials (gold "seeds" implanted in and/or around the tumor that enable CyberKnife System to track it) rather than a frame.

"All of our patients had to have a head frame or halo applied to treat the lesion. With the Cyberknife, we can treat a wider variety of lesions both in the brain and elsewhere in the body without having to apply the halo skull clamp," says Ewend.

The CyberKnife system at UNC Hospitals is augmented with the Synchrony™ Respiratory Tracking System, the first technology in the world capable of delivering robotic radiosurgery to targets that move with respiration, such as lung, liver, kidney and pancreatic tumors. Traditional radiation treatment devices are unable to compensate for the body's natural motion. Synchrony literally synchronizes the CyberKnife System's linear accelerator to the motion of the tumor, automatically adjusting and compensating for patient and tumor movement in real-time while delivering radiation, with updated X-ray image guidance at every beam position.

"The use of robotic compensation for respiratory movement is one of the most important advances in radiation oncology," said David Morris, MD, director of the UNC CyberKnife Program and UNC Lineberger faculty member. "Because of its ability to track tumors during the breathing cycle, we can reduce the amount of normal tissue receiving high doses of radiation. This allows us to complete treatment in fewer sessions, compared to multiple treatments over several weeks required by conventional radiation therapy."

Because of its accuracy, flexibility and ability to track tumors, other areas of the body become treatable with robotic radiosurgery, such as the spine, lung, prostate, liver and pancreas.

Richard Feins, MD, chief of thoracic surgery, said the CyberKnife "expands the treatment options for patients who would typically considered to be medically inoperable."

The CyberKnife System "is able to treat many spinal tumors located in areas that are surgically difficult to access because of proximity to the spinal cord. It is also a valuable treatment option for patients who have received prior radiotherapy or who are not candidates for open surgery," Morris says.

Additionally, many CyberKnife treatments

One of the goals we have is to create safer treatments. Something that is safe, something that is accurate, and something flexible, efficient, effective and reliable ... that's what we think we've got here.

can be performed on an outpatient basis, and it is possible to treat multiple tumors at different locations in the body during a single or a limited number of treatment sessions. Patients routinely do not require general anesthesia and recovery periods are short.

While the CyberKnife System is revolutionary, it is far from experimental. More than 95 hospitals and medical centers worldwide now operate CyberKnife centers. The CyberKnife has been used to treat more than 20,000 patients to date and more than 150 peer-reviewed papers have been published documenting its efficacy. Developing a robotic radiosurgery program has been demonstrated to offer hospitals the opportunity to expand the options they provide to their patients by creating an entirely new referral pattern.

The CyberKnife remains the only robotic radiosurgery system that is FDA-approved to treat any part of the body with radiosurgery. With the Synchrony, the CyberKnife remains the only system that has the ability to track a moving tumor while the patient is breathing.

"One of the goals that we have is to create safer treatments. Something that is safe, something that is accurate, and something that is flexible, efficient, effective and reliable. And that's what we think we've got here," says Morris.

Since UNC's CyberKnife became operational last August, more than 40 patients have been treated at UNC Health Care with this new state-of-the-art technology. Projections indicate that UNC could treat between 100-200 patients this year with the CyberKnife.

For more information about the CyberKnife Center at UNC Hospitals, visit: http://www.med.unc.edu/radonc/patients/treatment/cyberknife.htm.

All-Digital Mammography

Since September 5, 2007, all mammography at UNC Health Care has been performed with digital breast imaging equipment.

"This is good news for women, because it means we will be able to detect more breast cancers at earlier stages in their development. Earlier detection allows us to begin treatment earlier and greatly improves a woman's chances of a complete recovery," said Cherie Kuzmiak, DO, UNC's director of breast imaging.

Kuzmiak said UNC Health Care decided to move to all-digital mammography based on the results of a nationwide clinical trial, led by UNC's Etta Pisano, MD, that tested the accuracy of digital mammography versus screen-film mammography. The study, called the ACRIN Digital Mammographic Imaging Screening Trial (DMIST), was published in The New England Journal of Medicine in 2005. It found that digital mammography detected up to 28 percent more cancers than screen-film mammography in women ages 50 and younger, premenopausal and perimenopausal women, and women with dense breasts.

Pisano, who was UNC's director of breast imaging at the time of the study, now serves as vice dean for academic affairs in the UNC School of Medicine and director of the UNC Biomedical Research Imaging Center.

"The DMIST results showed that it was necessary to move forward and transform the rest of the department," says Kuzmiak. "Everyone, especially Dr. Pisano, has worked extremely hard to bring such cutting edge care to all North Carolinians."

Digital vs. Film

Both digital and film mammography use X-rays to produce an image of the breast. Digital mammography takes an electronic image of the breast and stores it directly in a computer, allowing the recorded data to be enhanced, magnified, or manipulated for further evaluation. The electronic image also can be printed on film.

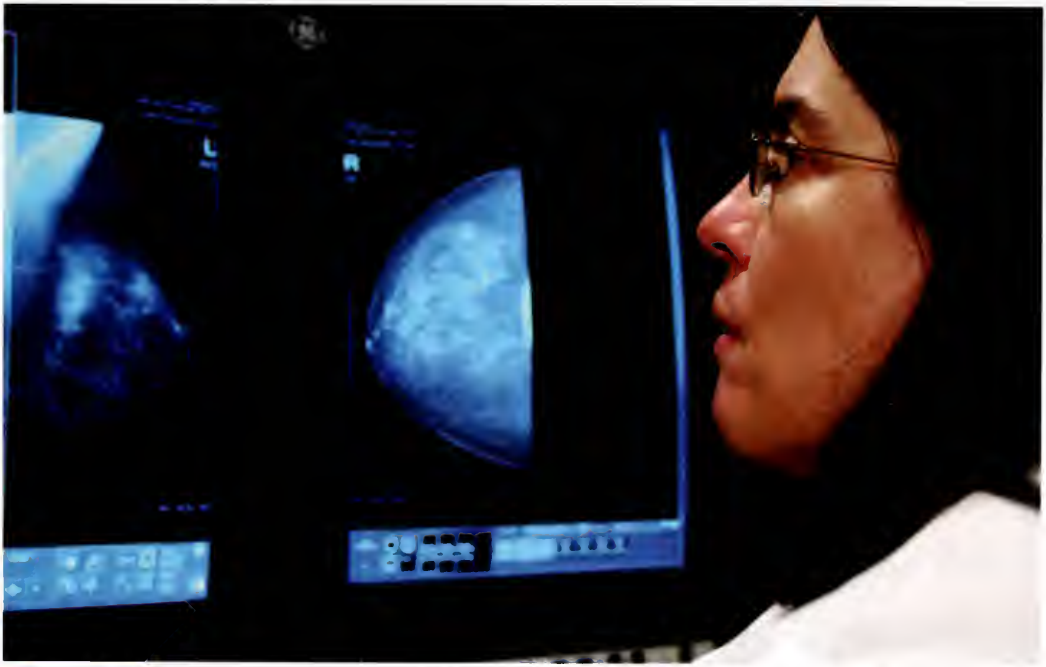
In film mammography, which has been used for more than 35 years, film is used to capture and display the image. While film mammography is very good, prior national studies suggest that approximately 10 to 20 percent of breast cancers detected by breast self-examination or physical examination were not visible on film mammography.

From a woman's perspective, digital mammography examination is similar to a traditional mammogram. Positioning and compression of the breast are identical.

In addition, Kuzmiak says, women will benefit because digital mammography exams take about 35 percent less time to perform than film mammography exams. A study published in 2006 found that screen-film mammography exams take an average of almost 22 minutes, while digital exams take only about 14 minutes. Digital mammography takes less time because it acquires images more quickly and because there is no waiting time for film to develop, Kuzmiak says.

Digital mammography will be provided at three locations on the UNC Hospitals campus in Chapel Hill: The NC Clinical Cancer Center (aka, the Gravely Building), the NC Women's Hospital and the Ambulatory Care Center.

"Since I was the leader of the study that proved the benefit of digital mammography over film, it is quite gratifying to me that UNC has made this transition to digital mammography," Pisano said. "This will benefit women with dense breasts where film mammography is not as good at finding early breast cancer."



UNC Health Care's decision to move to all-digital mammography was based on the results of a nationwide clinical trial led by UNC's Etta Pisano, MD (above).

The Rest of the Story

Dr. Bill McLendon and his two late co-authors, Drs. Bill Blythe and Floyd Denny, have written the latest chapter in the history of medicine in North Carolina

BY EDWARD BYRNES

Probably no one is better versed in the roots of the UNC School of Medicine than William W. McLendon, MD. His latest book, co-authored with the late Floyd W. Denny Jr., MD, and the late William B. Blythe, MD, is perhaps McLendon's greatest contribution yet to the history of medicine at UNC—and in the history

In this 2000 photo, Denny, left, McLendon, center, and Blythe select photographs to illustrate the Berryhill lecture compilation they published later that same year.

of medicine in the state of North Carolina. The book, *Bettering the Health of the People: W. Reece Berryhill, the UNC School of Medicine, and the North Carolina Good Health Movement*, examines the transformation of health care in North Carolina during the 20th century, with a focus on medical education at UNC and its founding father, W. Reece Berryhill, MD.

McLendon's most recent work is vastly different from the other two medical history books he has to his credit. *The Good Doctor And Other Selections From The Essays And Addresses Of William De Berniere MacNider*, which McLendon co-edited with Shirley Graves Cochrane in 1953, and *Norma Berryhill Lectures, 1985-1999*, which he co-edited with Blythe and Denny in 2000, were compilations and required relatively little writing.

"With the other two books, it was a question of selecting pre-existing material and editing. This one has been much different in the sense that I had to do most of the writing, but I enjoy writing," says McLendon.

The process of writing a book about as dynamic an individual as Berryhill requires extensive historical research. And while digging through documents and interviewing sources is one way to gather information, writers of similar biographical texts seldom have the added perspective of having personally known their subject and his environs as well as McLendon, Blythe and Denny.

McLendon, who retired in 1995 after 22 years as director of the UNC Hospitals laboratories and professor and vice-chair of the Department of Pathology and Laboratory Medicine, came to UNC–Chapel Hill from his native Greensboro as an undergraduate in 1948. A unique opportunity to work with Kenneth Brinkhous, MD, led the young pre-med student to enter the UNC School of Medicine in 1952, the same year that Berryhill began his tenure as dean of the newly established four-year school, after having served as dean of the two-year school since 1941.

"As medical students, most of us were in awe of Dean Berryhill. He was tall, distinguished and stern," says McLendon. "But he could also be very compassionate, as a physician to patients and as a mentor and counselor to students. We thought he was all-powerful and all-knowing, and we respected him greatly."

Blythe was a member of the next-to-last class to graduate from UNC's two-year medical school in 1951, but his ties to Berryhill did not begin, nor do they end, there. Not only had Blythe been a co-author with Berryhill and Isaac Manning in writing *Medical Education at Chapel Hill: The First Hundred Years* in 1979, but his father was also Berryhill's undergraduate classmate at Chapel Hill in the class of 1921.

As a matter of fact, Blythe's biographical sketch, which precedes his 1991 lecture in the Berryhill lectures book, contains the following insightful passage:

> *When Dr. Blythe, at the age of 15, decided to become a doctor, his father wrote his old friend [Dr. Berryhill] in Chapel Hill to ask how his son should prepare for a career in medicine. Dr. Berryhill responded with a letter of advice and encouragement and, characteristically, a discourse on the challenges and opportunities facing the Medical School.*

Berryhill's encouragement must have had an effect. Blythe went on to become a professor of medicine and head of the Division of Nephrology at

CONTINUED ON PAGE 35

Into the Danger Zone

UNC trauma surgeon Chip Rich is putting on a new kind of uniform

It's Tuesday and starting at 6:30 a.m., Dr. Preston "Chip" Rich, the chief of trauma and critical care at UNC Hospitals, is in meetings until 8:30 a.m.

Then it's off to the fire station, where he dons heavy protective gear and trains at the Chapel Hill and Carrboro Fire Academy until 3 p.m., in weather so hot he soaks his shirt twice.

A quick trip home and he's back in scrubs for more meetings, which last until 5 p.m. After checking on patients in the intensive care unit, he's on call until 6 a.m. ... when he starts all over again.

Except this time, he's hoping to find time to set up a new trampoline for his two sons.

"I have always drunk a lot of coffee," the 39-year-old surgeon said with a chuckle. "I've already learned to live without sleep so that doesn't get in the way."

Rich, a Chapel Hill resident, decided to fulfill a lifelong dream of becoming a firefighter this year. He began training in March will and will become a part-time firefighter for Chapel Hill on July 13 when he and 16 others graduate from the Fire Academy.

"I think he's out of his mind," joked coworker Liz Dreesen, assistant clinical professor of surgery at UNC Hospitals. "Where we work, we're very protected. We have millions of people to help us ... I think he wants a little more of an uncluttered view of what it is to save people's lives."

First word

Rich's mother tells him his first word was "firefighter" but the real spark to pursue his childhood dream came from Hurricane Katrina.

Rich was part of a team of health care workers from hospitals, emergency management and public health agencies across North Carolina that traveled to Waveland, Mississippi, with a mobile hospital to care for victims of the hurricane.

From this experience, Rich said he got to know more about first responders and was inspired to try his hand at this role he admired so much.

"It was time to do this," he said. "Firefighters are incredible people. They put their lives on the line for others."

Rich also just completed a two-year tenure as chairman of the MidCarolina Regional Advisory Committee, which develops regional trauma care.

For the past few months, he has been juggling training at the Fire Academy, working at the hospital, being a husband, and being a father to his two sons, ages 7 and 9.

"I can be four places at once," Rich joked. "It's that fifth place where it starts to crumble."

"He's here because he wants to be here," said Deputy Fire Chief Robert Bosworth, recalling a time when Rich arrived at training after spending 24 hours at the hospital. "He's always at his best."

Although Rich is enjoying

Opposite: *Preston "Chip" Rich opens a car door that he pried loose with the Jaws of Life during a training session. Rich, chief of trauma at UNC Hospitals, is completing the firefighters training course with the Chapel Hulll Fire Department.* Above: *Rich speaks with colleague Dr. Horacio Hojman in the ICU.*

Rich (left) sips water during a break at the firefighters training program. Rich is completing the firefighters training course with the Chapel Hill Fire Department so that he can be involved with on-site emergency situations that require medical expertise.

his foray into firefighting, it is intensely demanding.

"This has to be the most physically demanding thing I've ever done in my life bar none," he said. "It takes a lot of inner strength to get yourself to jump out of a four story window. Every fiber in your body is telling you not to do it."

The 5-foot-10-inch doctor ran the Chicago Marathon twice and generally runs five to seven miles most days of the week. He said firefighting motivates him to stay in shape.

"Nothing makes me want to do more push-ups and sit-ups than knowing I might be the one that might have to pull my partner out of a hole or a burning basement," he said.

Two worlds

Rich has found a number of similarities between his two worlds.

"You can't be a good doctor and can't be a good firefighter without a good understanding of teamwork," he said. "They take a lot of creativity and thought because each situation is different [and] you need to function within a certain hierarchy."

Running a trauma center is very similar in a lot of ways to running a fire department, he continued. "You gotta have everything ready. It's the cost of readiness, and it costs a lot, that's the main drag."

But firefighting holds an excitement Rich does not experience in the operating room.

"Part of that is you realize fire fighting is dangerous," he said. "People die doing this. I've had to expose myself to danger in a way I've never had to before."

One training exercise involves getting through a maze with zero visibility while using an oxygen tank. It simulates the dark and confined spaces firefighters some times have to break through.

"The bottle has a limited

amount of air—between 15 and 30 minutes—and a lot of that depends on your breathing rate, which depends on your anxiety and exertion," he explained. "At one point, it was actually so tight we had to take our air packs off our backs and push them in front of us, sometimes up a ladder or down a ladder."

"We always know [in training] if there's a problem, they'll get you out right then, but you realize in real life, that's not an option," he said.

Dressen says Rich thrives on this kind of atmosphere.

"People who are trauma surgeons have a constant need for excitement and drama," she said. "This is kind of an extension of that."

Indeed, while on the job, Rich regularly sees patients who have been shot or stabbed or injured in car accidents. Almost 60 percent of his department's patients are transferred in by helicopters since UNC Hospitals is one of five level one trauma centers in the state, a classification based on medical specialists available and other criteria.

Rich says the lion's share of patients they see are from car wrecks. "A lot of really sad stuff happens," he said.

Family man

At the end of the day, whenever that ends up being, Rich tries to spend time with his wife, Melissa Rich, a gastroenterologist, and his two sons.

"Honestly, I haven't noticed that much of a difference in his schedule, since his schedule is always crazy," said Melissa Rich. "He's probably more physically exhausted when he gets home, so he has maybe less energy to play with the kids. Beyond that, he really transitioned pretty easily and made a big effort to not let it affect us that much."

She said the bonus of his new pursuit is "he's doing his own laundry because his fire clothes get so dirty he has to wash them every night."

She admitted she didn't foresee him actually going through with becoming a firefighter.

> Where we work, we're very protected. We have millions of people to help us ... I think he wants a little more of an uncluttered view of what it is to save people's lives.

"He always has more than one thing going on, that's just the way he's happiest," she explained. "And so, frankly, when he said he was going to join the fire company, I smiled and laughed and said I'll believe this when I see it ... and then it came to fruition."

Rich is excited to graduate from the Fire Academy and return to a simply hectic, rather than extremely hectic, life.

"It's been a long academy," he said. "I learned much more than I thought I was going to learn and feel an immense sense of accomplishment."

Next up, he hopes to complete an urban search-and-rescue program to become a rescue technician, where he could enter collapsed structures and provide medical care on the scene.

"I love being a doctor, and I love being a firefighter," he said. "I'm pretty lucky."

This story was written by Sapna Maheshwari and originally appeared in the June 27, 2007 edition of The Chapel Hill News. *The photographs are by Chapel Hill News staff photographer Leslie Barbour. As of January 2008, Rich completed training in Urban Search and Rescue in November and is now a member of North Carolina Task Force 8 (USAR NCTF-8) as a structural collapse rescue technician. On January 1, he became the medical director of the Chapel Hill Fire Department, in addition to his duties as a firefighter, serving, on average, two shifts per month.*

Is There a Doctor in the House?

UNC leaders work out solutions before predictions of a physician shortage come true

BY DICK BROOM

During the 1940s, a severe shortage of doctors in North Carolina prompted the expansion of the UNC School of Medicine from a two-year certificate program to a full four-year degree-granting program.

Now, 60 years later, another looming physician shortage has School of Medicine leaders studying the possibility of enlarging medical school classes once again. They also are looking into providing the third and fourth years of medical education for some students in clinical settings in Charlotte and Asheville, and perhaps other cities as well.

"There are large, sophisticated medical facilities in each of those cities—Carolinas Medical Center in Charlotte and Mission Health & Hospitals in Asheville—where medical students could receive excellent clinical training," said William Roper, MD, MPH, dean of the School of Medicine and CEO of UNC Health Care. "A study that we have had under way for more than a year now has been exploring those possibilities, but we have made no decisions, and the University and the state certainly have not decided that this is what we should do."

Nearly all who study medical workforce issues recognize that, nationally and in North Carolina, there are many places that do not have enough doctors, and they agree that, if current trends continue, the shortages will deepen and spread.

A report issued in June 2007 by the North Carolina Institute of Medicine (NCIM) found that "current data indicate that physician growth is no longer keeping pace with population growth in North Carolina." The report, titled "Providers in Demand: North Carolina's Primary Care and Specialty Supply," concluded that the state needs to engage "simultaneously in multiple strategies to increase supply" and should do so "before the state is in the midst of a full-blown crisis."

Increasing the number of medical students tops the list of strategies recommended by the study's authors. Other recommended strategies include expanding the number of physicians trained in North Carolina residency programs, keeping more North Carolina-trained physicians in the state, and

recruiting more physicians from other states.

The study of the state's primary care and specialty workforce was a joint project of the Institute of Medicine, the Area Health Education Centers (AHEC) Program, and the NC Health Professions Data System and Southeast Regional Center for Health Workforce Studies at the Cecil G. Sheps Center for Health Services Research in the School of Public Health.

In 2005, there were 20.7 physicians for every 10,000 people in North Carolina.

If nothing is done to change the supply of providers, the NCIM report says, the ratio of physicians to population is expected to drop by 8 percent by 2020 and by 21 percent by 2030. The state's healthcare needs are expected to increase, it says, due to population growth, aging of the population and an increase in the prevalence of chronic diseases.

Another factor is the aging physician population, Roper says.

"Many physicians began practicing in the 1960s and early '70s, and they are now approaching their retirement," he said. "That will make this looming shortage even worse."

Historically, rural parts of the state have found it especially difficult to attract and retain physicians, and that continues to be the case. And the shortage of physicians in rural areas is likely to worsen as even urban centers, once thought to be largely immune from physician shortages, start feeling the pinch.

"We will likely see shortages even in the Raleigh-Durham-Chapel Hill area, which is one of the areas of the state that is least impacted today," said Marschall Runge, MD, professor and chair of medicine at UNC. "If the predictions for population growth in North Carolina prove to be correct, we will be facing very significant physician shortages across the state."

The physician shortage hasn't become an impending crisis overnight. It has been building for years, as medical schools in the United States have failed to keep up with the nation's need for new doctors. A whopping 25 percent of the 23,700 residency positions available in this country each year are filled by graduates of medical schools outside the U.S.

George Sheldon, MD, distinguished professor and former chair of surgery and research professor of social medicine at UNC, has written extensively on health care workforce issues. In a paper published in 2006, he cited data from the National Residency Matching Program showing that, in 2005, only 41 percent of family medicine residencies and 56 percent of internal medicine residencies were filled by US medical school graduates.

While international medical school graduates are helping to prop up the health care system in this country, those who aren't US citizens are contributing to the brain drain from their home countries.

"There is increasing concern that the developed western countries are recruiting physicians from undeveloped countries, which raises issues of international distributive justice," Sheldon wrote.

He believes the US ought to be capable of educating and training enough physicians to meet its own needs.

"The highest priority for the future of US and international medicine ... is to increase the number of medical school positions and recruit all qualified candidates," he wrote.

Among those sharing that view is Thomas Ricketts, PhD, professor of health policy and administration in the UNC School of Public Health and director of the NC Rural Health Research Program and Program on Health Policy Analysis. He also is editor of the North Carolina Medical Journal. Ricketts says the reason the US isn't producing enough doctors is simple.

"We stopped building and expanding medical schools for about 20 years starting around 1980," he said. "We began depending more on international medical graduates, but now that supply has tightened up. After September 11, we made it tougher for people to get into the country."

North Carolina has a smaller percentage of international medical school graduates than many other states, but more than half of the physicians currently practicing in North Carolina are graduates of medical schools or

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University Cancer Research Fund panel sets priorities, adds national experts

The governance committee of the University Cancer Research Fund has established first-year spending priorities for the state's initial $25 million investment at the University of North Carolina at Chapel Hill.

The fund was created last year by the North Carolina General Assembly and signed into law by Governor Mike Easley in July. The goal is to accelerate cancer research at UNC's School of Medicine, Lineberger Comprehensive Cancer Center and the North Carolina Cancer Hospital, now under construction. The fund will increase to $50 million per year beginning in 2009.

The fund's governance committee, chaired by UNC President Erskine Bowles, is charged with setting research funding priorities that advance understanding of the causes and course of cancer, apply this knowledge to devise new methods of prevention and treatment, and improve cancer outcomes in the state and the nation.

The committee has identified three broad areas that build upon existing strengths: discovery of the molecular and cellular processes associated with cancer and how their interaction with genetic predisposition results in cancer; innovation by using new knowledge to inform, design, evaluate and implement research in the prevention, early detection and treatment of cancer; and delivery of improved cancer care throughout North Carolina.

The first-year budget also includes funds for investment in innovative research ideas through a competitive pilot or seed grants program and in promising new researchers. To assure the fund's long-term success, the fund will establish processes for ongoing research strategic planning and evaluation.

Two nationally renowned cancer experts will serve on the fund's governance committee. Edward Benz Jr. is president and CEO of Dana-Farber Cancer Institute in Boston. John Mendelsohn is president of the University of Texas MD Anderson Cancer Center in Houston.

"The Lineberger Comprehensive Cancer Center at UNC is one of the top National Cancer Institute-designated centers in the country and has an admirable record of interaction and collaboration with other cancer centers," said Benz, also the Richard and Susan Smith Professor of Medicine at Harvard Medical School.

"I am pleased to have the opportunity to work with Dr. (Shelton) Earp and the Lineberger leadership to find the very best ways that this funding can be used to advance collaborative translational science and the overall mission of the Lineberger Comprehensive Cancer Center," Benz said.

"The North Carolina General Assembly was incredibly forward thinking in establishing this fund dedicated to advancing cancer research and providing the institutions here with a steady stream of support," said Mendelsohn, a professor of cancer medicine at the University of Texas Graduate School of Biomedical Sciences.

"Today, funding for cancer research must come from a wide range of government, industry and private sources to step up findings and move those advancements to patients faster. The state's investment today will touch the lives of millions of North Carolinians—and Americans—for decades to come," Mendelsohn said.

Other committee members, who are UNC-Chapel Hill administrators, are Dean Robert Blouin of the School of Pharmacy; Shelton Earp, MD, director of the Lineberger Cancer Center; Dean Barbara Rimer of the School of Public Health; and William Roper, MD, MPH, dean of the UNC School of Medicine, vice chancellor for medical affairs and CEO of the UNC Health Care System.

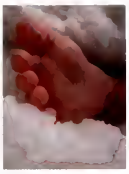
The fund will target seven specific research priorities under the umbrella of these strategic areas:

- Assessing cancer in North Carolina with particular attention to disparities;
- Promoting innovative research in cancer prevention and early detection;
- Developing clinical application of genetics and genomics;
- Turning basic research into new cancer therapies;
- Defining early response to cancer therapy and improving cancer clinical trials;
- Enhancing clinical excellence across our multidisciplinary cancer teams and across the state; and
- Initiating a nation-leading, multi-component cancer survivorship research program.

UNC to launch Infant Study of Inhaled Saline trial

Early this year, researchers at UNC-Chapel Hill will begin enrolling infants in a clinical trial to test the effectiveness of inhaled saline as a treatment for cystic fibrosis lung disease.

It's a treatment that was proven to work in adults in two earlier studies—one by researchers at UNC and one funded by the Cystic Fibrosis Foundation in Australia. Both studies were published in *The New England Journal of Medicine* in January 2006.



The clinical trial, called "Infant Study of Inhaled Saline" or ISIS, will be the first to test the treatment in infants over an extended period of time, said Stephanie Davis, MD, an associate professor of pediatrics in the UNC School of Medicine and one of three principal investigators in the multicenter clinical trial.

In addition to Davis, the study's principal investigators are Margaret Rosenfeld, MD, MPH, of Children's Hospital and Regional Medical Center in Seattle, and Felix Ratjen, MD, FRCP, of The Hospital for Sick Children in Toronto. Other UNC investigators taking part in the study include Scott Donaldson, MD, and respiratory therapist Robin Johnson.

UNC grant will support HIV/AIDS research in China

The National Institute of Child Health and Development has awarded $1.97 million to the UNC-Chapel Hill School of Medicine over the next five years to increase and improve the application of social sciences to the prevention and treatment of HIV/AIDS in the Peoples Republic of China.

This is one of nine such awards, the only one for China. Gail Henderson, PhD, professor of social medicine and sociology in the School of Medicine, is the principal investigator. Collaborators include Peoples University (Beijing), the China CDC National Center for AIDS Prevention and Control, and the Nanjing National Center for STD Prevention and Control, as well as collaborators at the University of Chicago and the University of Wisconsin.

"This award will allow us to examine the potential of social scientists to collaborate with public health researchers in order to stop HIV epidemic in China," said Henderson.

Center for Genomics and Society receives $5.6 million

UNC has received a $5.6 million grant to establish the UNC Center for Genomics and Society. This research center will study the most critical ethical, legal and social questions faced by researchers and the public involved in genetic and genomic research.

The funding was announced last October by the National Human Genome Research Institute, part of the National Institutes of Health, which is also funding a similar center at the University of Pennsylvania. Both centers are being created as part of the Centers for Excellence in Ethical, Legal and Social Implications Research initiative, launched by NHGRI in 2004.

Gail Henderson, PhD, professor of social medicine in the UNC School of Medicine, is the principal investigator for the center. She leads an interdisciplinary team of researchers across the UNC campus and colleagues at North Carolina Central University, RTI International, and Wake Forest University. The center is part of the Carolina Center for Genome Sciences, directed by UNC's Terry Magnuson, PhD.

Corticosteroid injections may raise risk of cerebral palsy

When pregnant women are at high risk for preterm birth, giving them a single injection of corticosteroids has been shown to reduce the baby's chances of having serious lung problems after birth.

But some women receive multiple injections of corticosteroids, and a new study shows that repeat courses of corticosteroids are linked to an increased rate of cerebral palsy among children of these mothers.

"Our study shows that you get almost all of the benefit from a single round of therapy and that multiple rounds raise the risk of cerebral palsy, which is a severely disabling condition," said John M. Thorp, MD, a study co-author and McAllister Distinguished Professor of Obstetrics and Gynecology at the UNC-Chapel Hill School of Medicine.

"That's why we concluded that exposure to repeat courses should be limited," Thorp said.

The study results were published in the September 20, 2007, issue of *The New England Journal of Medicine*. The lead author is Ronald J. Wapner, MD, of Drexel University in Philadelphia. The study was conducted for the Maternal-Fetal Medicine Units Network of the National Institute of Child Health and Human Development, which provided grant funding. Research took place at 14 sites across the United States, including UNC-Chapel Hill.

Schizophrenia research receives $10 million renewal grant

A schizophrenia research center based at UNC-Chapel Hill has received a five-year, $10 million renewal grant from the National Institute of Mental Health, part of the National Institutes of Health.

The renewal grant, to be paid in annual installments of more than $1.9 million, will enable the center to continue its ongoing research program of five projects, said John Gilmore, MD, the center's director and principal investigator.

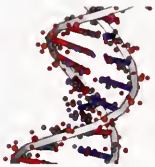
The Silvio O. Conte Center for the Neuroscience of Mental Disorders, also known as the UNC Conte Center, brings together a diverse group of experts from UNC-Chapel Hill, Duke University and the University of Utah to conduct comprehensive studies of brain development in the earliest stages of life through early adulthood, when schizophrenia is typically diagnosed. It was established in 2002 with an initial five-year grant from the NIMH of more than $9.3 million.

Two recent journal publications are based on UNC Conte Center work. One, published in the February 2007 issue of *Radiology*, found that 26 percent of babies born vaginally experienced intracranial hemorrhages or bleeding in and around the brain. The other, published in the February 7, 2007, issue of *The Journal of Neuroscience*, found that the regions of the brain that control vision and other sensory information grow dramatically in the first few months

following birth, while the area that controls abstract thought experiences very little growth during the same period.

Defects in critical gene lead to accelerated tumor growth

Cancer causing mutations occur in our bodies every day—but luckily, we have specific genes that recognize these malignant events and keep cells from growing out of control. Only a few of these genes—called tumor suppressors—are currently known.



Now scientists at the UNC-Chapel Hill School of Medicine and Harvard Medical School have added to the list another powerful tumor suppressor, a gene called LKB1. Their research indicates that this gene is mutated in almost a quarter of all human lung cancers. In mice, these mutations result in tumors that are more aggressive and more likely to spread throughout the body.

"Defects in this gene appear to result in a much nastier form of lung cancer, a disease that is bad to begin with," said Norman Sharpless, MD, an assistant professor of medicine and genetics in the UNC School of Medicine, a member of the UNC Lineberger Comprehensive Cancer Center and a senior author of the study. This finding is expected to help doctors better assign a prognosis to their patients, as well as giving them a new target for future therapies, Sharpless said.

Study co-authors at UNC include Matthew Ramsey, Cheng Fan, Chad Torrice and Janakiraman Krishnamurthy. Drs. Kwok-Kin Wong of Dana-Farber Cancer Institute and Nabeel Bardeesy at Massachusetts General Hospital contributed equally to this work.

UNC to lead new $10 million autism research project

Carolina is one of six centers of excellence nationwide selected to take part in a new autism research project sponsored by the National Institutes of Health.

The network of sites will examine very early brain development in infants at risk for an autism spectrum disorder. Joseph Piven, Sarah Graham Kenan professor in the School of Medicine and director of the Neurodevelopmental Disorders Research Center, is principal investigator. Direct NIH funding for the project will total $10 million.

Members of the research network will examine more than 500 siblings of children with autism at 6, 12 and 24 months of age.

Initially, five centers and one network received funding in 2007 to study ASD. Funding for a second set of research programs will be announced this year. Data from the study will be contributed to the National Database for Autism Research, housed at the NIH.

In addition to UNC, other 2007 ACE program award recipients are the University of Illinois at Chicago, University of California-San Diego, University of Washington, University of Pittsburgh and University of California-Los Angeles.

Drug derived from Gila monster saliva helps diabetics control glucose, lose weight

Exenatide, a drug that is a synthetic form of a substance found in Gila monster saliva, led to healthy sustained glucose levels and progressive weight loss among people with type 2 diabetes who took part in a three-year study.

"The weight loss factor is important because being overweight and weight gain is an almost universal problem for people with diabetes," said John Buse, MD, PhD, lead researcher in the study and chief of endocrinology in the UNC-Chapel Hill School of Medicine.

"In that context, it is exciting that patients that continue exenatide injections continue to lose a bit of weight while maintaining blood sugar control, even in their third year of therapy," Buse said.

Buse presented these results last June at the annual scientific sessions of the American Diabetes Association in Chicago. He is currently the ADA's president for medicine and science.

The study's co-authors are Leigh MacConell, PhD, Anthony H. Stonehouse, PhD, Xuesong Guan, James K. Malone, MD, Ted E. Okerson, MD, David G. Maggs, MD, and Dennis D. Kim, MD. All of the co-authors work for Amylin Pharmaceuticals except for Malone, who works for Eli Lilly and Company. Amylin has a global agreement with Eli Lilly and Company to collaborate on the development and commercialization of exenatide. Funding for this study was provided by Amylin and Eli Lilly and Company.

Total research revenues top $610 million

As federal funding for research stalls and competition for investment from other sources heats up, UNC-Chapel Hill has again grown its revenues. Growth hit 2.9 percent in fiscal 2007, putting UNC above $610 million in total grants and contracts. That's $17 million more than last year's record of $593 million, and more than twice as much revenue just 10 years ago.

"Our growth in sponsored funding reflects the high quality of innovative faculty who are finding solutions to some of the most pressing problems facing us today," said Chancellor James Moeser.

While competition for funding from the National Institutes of Health has increased sharply, UNC's share of those funds rose 6.6 percent to $314 million, accounting for 51 percent of overall investments. The School of Medicine attracted $298 million in 2007, almost two-thirds from the National Institutes of Health.

The School of Public Health received $115 million and the College of Arts and Sciences attracted $95 million. Interdisciplinary centers, institutes and other units that do not fall under one particular school accounted for $138 million.

The School of Social Work grew by 36 percent to more than $18.7 million, and the School of Pharmacy saw a 41

percent jump in revenue to $13.5 million.

UNC and its Board of Trustees also placed an emphasis on retaining excellent faculty members, which helps leverage research investments and attract other quality research collaborators, Waldrop said

Strains of lab mice more varied than previously thought

A collaborative study by scientists at UNC-Chapel Hill and The Jackson Laboratory in Bar Harbor, Maine, has found that the genetic variation in the most widely used strains of laboratory mice is vastly greater than previously thought.

Where previously there were only 140,000 variations in DNA sequence described, it turns out there are 8.3 million.

Moreover, the study found that the pedigrees of the 15 mouse strains studied are not what they were previously assumed to be. It appears they differ from each other to a far greater degree than do the pedigrees between humans and chimpanzees.

The research, first published online July 29 in the journal *Nature Genetics*, could have major implications for the interpretation and design of studies past and future.

"Our article reports the first comprehensive analysis of such variation with an emphasis in evolutionary origin of the variation and its implications for biomedical research. We have rejected many long-held assumptions about the origin and relationships among mouse strains. In the light of our results, the conclusions of previous studies and the design of future studies need to be reevaluated," said study co-author Fernando Pardo-Manuel de Villena, PhD, assistant professor of genetics at UNC's School of Medicine.

Other study coauthors are Hyuna Yang, postdoctoral researcher at The Jackson Laboratory, and Timothy Bell, laboratory manager for Pardo-Manuel.

Pregnancy may increase risk of binge eating disorder

Pregnancy may open a window of vulnerability for developing binge eating disorder, especially for women from lower socio-economic situations, according to a study from UNC-Chapel Hill researchers and colleagues in Norway.

In a long-term study of 100,000 pregnant Norwegian women, the researchers saw an unexpected increase in new incidences of binge eating disorder that began during pregnancy. The research is the largest population-based study of eating disorders during pregnancy.

Previously, small clinical studies had suggested that often eating disorders go into remission during pregnancy, just as some pregnant women spontaneously quit smoking cigarettes.

"We need to be very vigilant across the socioeconomic spectrum to screen for the development of disordered eating during pregnancy. It's very important that all women receive adequate prenatal care that includes nutritional support," said Cynthia M. Bulik, PhD, lead study author and William R. and Jeanne H. Jordan Distinguished Professor of Eating Disorders in the Department of Psychiatry at the UNC School of Medicine and the Department of Nutrition in the UNC School of Public Health.

The findings were published in the August 2007 issue of *Psychological Medicine*. The research was supported by grants from the National Institutes of Health.

Other UNC-Chapel Hill authors include biostatistician Ann Von Holle; Robert Hamer, PhD, a professor in the Department of Psychiatry; Anna Maria Siega-Riz, PhD, associate professor in the departments of nutrition and epidemiology; and Patrick F. Sullivan, MD, professor in the departments of psychiatry and genetics.

Specific protein required for nerve connections

Neurons, or nerve cells, communicate with each other through contact points called synapses. When these connections are damaged, communication breaks down, causing the messages that would normally help our feet push our bike pedals or our mind locate our car keys to fall short.

Now scientists at the UNC-Chapel Hill School of Medicine have shown that a protein called neurexin is required for these nerve cell connections to form and function correctly.

The discovery, made in Drosophila fruit flies, may lead to advances in understanding autism spectrum disorders, as recently, human neurexins have been identified as a genetic risk factor for autism.

"This finding now gives us the opportunity to see what job neurexin performs within the cell, so that we can gain a better insight into what can go wrong in the nervous system when neurexin function is lost," said Manzoor Bhat, PhD, associate professor of cell and molecular physiology in the UNC School of Medicine and senior author of the study.

The study, published online last September in the journal *Neuron*, is the first to successfully demonstrate in a Drosophila model the consequences that mutating this important protein may have on synapses.

Study co-authors include James Ashley and Vivian Budnik from the University of Massachusetts Medical School.

Anti-clotting drug found to be safe in sickle cell patients

Only one drug is currently approved to treat sickle cell disease, but a small study at the UNC-Chapel Hill School of Medicine suggests that an intravenous blood thinner, widely used in patients with acute heart problems and during coronary artery stent placement, might become a new therapy for people with this painful disorder.

"We have tested a potentially promising drug in sickle cell patients, and the drug appears to be well tolerated This gives us the impetus to go ahead with further studies of eptifibatide in these patients," said Leslie V. Parise, PhD, department chair and professor of biochemistry and biophysics at the UNC School of Medicine

The hallmark of sickle cell disease is malformed red blood cells that can cause sudden painful episodes when they block small blood vessels. However, sickle cell patients are also at increased risk of developing other complications, including strokes, lung complications and pulmonary hypertension.

The most frequent manifestations of sickle cell disorders are anemia and pain episodes. The episodic exacerbation of pain, often called "crises," is unpredictable and may occur often in some patients.

The only drug presently approved for the treatment of sickle cell disease is hydroxyurea, which has been shown to reduce the frequency of painful episodes.

The results of the study were published online October 6, 2007 in *The British Journal of Haematology*.

Other UNC authors of the study are graduate student Mohamed Zayed of the Department of Pharmacology and Eugene P. Orringer, MD, professor of medicine. Authors from Millennium Pharmaceuticals at the time of the study were Jeanne M. Manganello, PhD, and David R. Phillips, PhD.

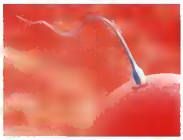
The study was funded by the National Institutes of Health and the American Heart Association.

Gene defects could be new cause of male infertility

Scientists at UNC-Chapel Hill have identified a gene crucial to the final step of the formation of a functional sperm cell.

That final step—called spermiogenesis—entails the compaction of DNA into a tight ball within the head of the sperm so it can successfully penetrate an egg. Mice engineered to lack the crucial gene, Jhdm2a, that triggers this process did not produce many mature sperm, and those they did produce had abnormally shaped heads and immotile tails.

"Defects in this gene could be the cause for some cases of male infertility," said study senior author Yi Zhang, PhD, Howard Hughes Medical Institute investigator and professor of biochemistry and biophysics in the UNC School of Medicine. Zhang is also a member of the UNC Lineberger Comprehensive Cancer Center.



"Because this gene has a very specific effect on the development of functional sperm, it holds great potential as a target for new infertility treatments that are unlikely to disrupt other functions within the body."

The study, published online in the journal *Nature* last October, provides evidence that Jhdm2a directly controls expression of several genes required for DNA packaging in sperm cells. The research was funded by the Howard Hughes Medical Institute and the National Institutes of Health.

Zhang and his colleagues are now looking for mutations in this gene in infertility patients, and are also interested in identifying the partners or cofactors in the cell that help this gene do its job.

Study co-authors include Greg Scott, Manas K. Ray and Yuji Mishina from the National Institute of Environmental Health Sciences.

Elderly with high blood pressure less likely to get lifestyle modification advice from doctors

People older than 60 with high blood pressure are less likely than other groups of patients to receive advice from their doctors about lifestyle modifications that can help lower their blood pressure, a study by UNC researchers concludes. In addition, hypertension (high blood pressure) patients who are not taking antihypertensive medication and patients wh are not overweight or obese are less likely to receive lifestyle modification advice than groups such as hypertension patients aged 18 to 39, those who are overweight or obese and those taking antihypertensive medication, said Anthony J. Viera, MD, MPH, the study's lead author.

"Our study found that most people who have been diagnosed with high blood pressure say they remember receiving at least some advice from their doctors about lifestyle modifications—such as eating healthier, exercising more and reducing both salt and alcohol intake—that can help lower their blood pressure," Viera said.

"However, the most important finding of the study is who is not getting that advice," Viera said. "Lifestyle modification advice should always be the doctor's first step in treating a patient with high blood pressure, and this advice should not be abandoned at any point, in any group of hypertension patients."

The study was published in the November 2007 issue of *The Journal of Clinical Hypertension*. Viera, an assistant professor in the Department of Family Medicine, was the principal investigator. His UNC co-authors are Abhijit V. Kshirsagar, MD, MPH, and Alan L. Hinderliter, MD.

Lifetime trauma may speed progression of HIV, early death

Even though effective drug cocktails have improved the outlook for many patients with HIV, disease progression, including the time from AIDS onset to death, varies widely from patient to patient. Now, a study led by the UNC-Chapel Hill School of Medicine provides new evidence that psychological factors play a role in disease progression.

The study is the first-known in the era of highly active antiretroviral therapy (HAART) for HIV to show that traumatic life events, such as physical or sexual abuse, are associated with faster mortality, both from AIDS-related and all causes.

"Trauma and depression are common among people with HIV, and trauma and depression seem to have an effect on disease progression and mortality in HIV. Given that, it is critical that clinicians treating people infected with HIV recognize depression and trauma as risk factors for poor health outcomes, and thus screen and refer patients

for psychological and psychiatric treatment when these problems are present," said Jane Leserman, PhD, professor of psychiatry and medicine and lead author of the study.

"Some combination of cognitive behavioral therapy and medication might be very beneficial for patients experiencing severe or multiple types of trauma," Leserman said.

The study was published in the November 1, 2007 edition of *The American Journal of Psychiatry*.

Coauthors of the study at Duke University are Brian Wells Pence, PhD, of the Center for Health Policy; Kathryn Whetten, PhD, of the Terry Sanford Institute of Public Policy; Nathan M. Thielman, MD of the Division of Infectious Diseases; Marvin S. Swartz, MD, of the Division of Social and Community Psychiatry; and Dalene Stangl, PhD, of the Department of Statistical Science. Michael J. Mugavero, MD, is in the Department of Medicine at the University of Alabama at Birmingham.

UNC Hospitals using hypothermia therapy to prevent brain damage after cardiac arrest

On October 1, 2007, the Emergency Department at UNC Hospitals began using induced hypothermia or cooling therapy to help prevent brain damage in people who have been revived after their heart stopped.

The treatment essentially involves injecting cold saline solution into the patient's veins and covering the patient with cold blankets until the body temperature drops from the normal level of 98.6 degrees Fahrenheit to about 92 degrees. The patient is then kept in this mild hypothermic state for 24 hours and then gently rewarmed and allowed to wake up. Cooling the patient reduces the brain's need for oxygen, helping to minimize the damage that typically occurs after the heart stops and blood flow to the brain is interrupted.

UNC Hospitals is the first university-based medical center in North Carolina to implement induced hypothermia therapy as a treatment for cardiac arrest, which is also known as ICED (induced cooling to eliminate deficits) therapy. Emergency medical technicians and physicians in Wake County began using the therapy in October 2006. Laurence Katz, MD, an associate professor of emergency medicine at UNC Hospitals, assisted Drs. Brent Myer and Paul Hinchey in writing the hypothermia protocols currently being used in Wake County.

UNC joins international study of laser therapy for stroke

Researchers at University of North Carolina Hospitals in Chapel Hill have joined a large international study to determine the effectiveness of near-infrared laser light therapy delivered to the brain within 24 hours of a stroke.

The treatment involves a handheld device attached to laser generator via a fiber-optic cable. The device (it resembles a shower head) delivers high-intensity near-infrared laser light through the skull and deep into the brain. At the wavelength delivered, it is thought the light helps generate cellular energy to brain areas affected by the stroke.

"It buys the brain time to restore blood flow to the area by providing a limited amount of energy," said David Y. Huang, MD, PhD, assistant professor of neurology in the UNC School of Medicine and associate director of the UNC Stroke Center at UNC Hospitals.

Huang is principal investigator for the UNC study site, one of five in North Carolina. Other sites include Moses Cohen Memorial Hospital in Greensboro; Forsyth Medical Center in Winston-Salem; Mission Hospitals in Asheville; and Duke University Medical Center in Durham.

More youths paying attention to North Carolina anti-smoking ads

A statewide anti-smoking campaign reached significantly more youths across North Carolina between 2006 and 2007, and most kids are paying attention to the message, according to an evaluation by researchers in the UNC-Chapel Hill School of Medicine.

The evaluation found that awareness of the campaign—called "Tobacco. Reality. Unfiltered." or TRU—increased from 54 percent of North Carolina youths in 2006 to 71 percent in 2007. The rise in awareness followed an increase in funding, provided by the North Carolina Health and Wellness Trust Fund, from $1.1 million to $4.5 million annually, which began in fall 2006.

In addition, the evaluation found that North Carolina youths responded well to the ads. More than 95 percent who had seen the ads run in 2007 reported that they were convincing, attention-grabbing, and gave good reasons not to use tobacco. More than 25 percent said they talked to their friends about the ads, indicating high "chat value." And anti-tobacco and pro-health attitudes among North Carolina youth remained stable and strong, the evaluation found.

"North Carolina's TRU campaign is now reaching nearly three-quarters of young people statewide between the ages of 11 and 17 with true and effective messages from real people in our state who have suffered from tobacco addiction and disease," said Adam O. Goldstein, MD, a professor in the UNC School of Medicine's Department of Family Medicine and director of UNC's Tobacco Prevention and Evaluation Program, which conducted the evaluation.

The TRU campaign was launched in April 2004 with three ads featuring North Carolina youths telling personal stories of their own or loved ones' serious health consequences from tobacco use. The ads, developed with information from a comprehensive report on best practices in youth tobacco prevention ads, ran until October 2004. A fourth ad, featuring a teen smoker who wanted to quit, aired that fall, and a second series of ads aired in fall and winter 2005.

UNC Hospitals named one of 41 top hospitals on Leapfrog 2007 Top Hospitals list

UNC Hospitals has been named one of the 41 best in the United States, based on results from the second Leapfrog Hospital Quality and Safety Survey. UNC Hospitals is the only hospital in North Carolina that made the Leapfrog 2007 Top Hospitals list.

The survey, a national rating system that offers a broad assessment of a hospital's quality and safety, was conducted by The Leapfrog Group, an organization that promotes improvements in the safety, quality and affordability of health care for Americans.

"About three years ago, we placed an increased emphasis on quality at UNC Health Care, and the results of those efforts are more and more apparent," said Dr. William L. Roper, chief executive officer of the UNC Health Care System, dean of the UNC School of Medicine and UNC's vice chancellor for medical affairs. "This recognition by Leapfrog is yet another wonderful benchmark that indicates we are moving in the right direction. Close attention to quality is at the heart of everything we do here for our patients and their families."

The Leapfrog 2007 Top Hospitals list is based on 1,285 hospitals that responded to the Leapfrog Hospital Quality and Safety Survey as of August 31, 2007. Data is collected from hospitals on their progress toward implementing practices in four categories:

1. Computerized Physician Order Entry (CPOE): Do physicians enter patient prescriptions and other orders into computers linked to error prevention software?
2. ICU Physician Staffing (IPS): Are intensive care units staffed by trained ICU specialists (intensivists)?
3. Evidence Based Hospital Referral (EBHR): How well do hospitals perform seven high-risk procedures and care for three high-risk neonatal conditions?
4. Leapfrog Safe Practices Score (LSPS): How well are hospitals progressing on the other 27 National Quality Forum-endorsed Safe Practices?

Top Hospitals fully meet Leapfrog's standard for ICU Physician Staffing (IPS) and the Safe Practices Score (SPS) and either of the following: (1) Two or more of the eight Evidence Based Hospital Referral (EBHR) areas; or, (2) CPOE plus one of the eight EBHR areas.

The Leapfrog survey is the latest of several ranking schemes that show UNC Hospitals among the top 50 in the country. Multiple specialties offered at UNC Hospitals have been ranked among the top 50 in the annual "America's Best Hospitals" issue of *US News & World Report* magazine every year for 14 years consecutively. For additional information, visit www.leapfroggroup.org.

Sixth annual N.C. Children's Promise radiothon/telethon raises nearly $800,000

A preliminary accounting shows that the sixth annual N.C. Children's Promise radiothon/telethon raised $788,558, an increase of more than $150,000 or almost 25 percent over 2006.

"We are tremendously grateful to the thousands of people all across the state who opened their hearts and their wallets for the benefit of patients at North Carolina Children's Hospital," said Dr. Alan Stiles, physician-in-chief at the Children's Hospital and chair of the Department of Pediatrics at the UNC-Chapel Hill School of Medicine.

"We also must thank the Curtis Media Group and Time Warner Cable's News 14 Carolina. Both devoted an enormous amount of time and resources to make this event a success," Stiles said. "The funds raised during this event are used to help North Carolina Children's Hospital provide cutting-edge care to children from across the state who have serious and complex medical problems. This outpouring of support shows the value the people of North Carolina place on the state's hospital for children."

News 14 Carolina's on-air personalities reported live from the Children's Hospital throughout the day on Thursday, November 15, running a special series of stories leading up to the celebration. In addition, seventeen Curtis Media radio stations broadcasted live from the Children's Hospital lobby from 5 a.m. until 11:30 p.m. For the first time in the radiothon/telethon's history, the radiothon stretched to nearly 30 hours of nonstop coverage as 96rock morning DJs, Salt and Demetri, continued to broadcast from the lobby until 9 a.m. the next morning.

On-site entertainment this year included live, in-person performances by musical performers Parmalee, Lee Brice, Keith Anderson, Jason Michael Carroll, Bucky Covington and Van Zant. The radiothon/telethon also included an online auction of many items autographed by celebrities with the proceeds benefiting the Children's Hospital.

Professors Parise and Narayan named AAAS Fellows

Leslie V. Parise, professor and chair of the Department of Biochemistry and Biophysics, and Roger Narayan, associate professor of biomedical engineering, were recently named fellows of the American Association for the Advancement of Science (AAAS) because of their scientifically or socially

distinguished efforts to advance science or its applications.

Parise won the award "for significant contributions to the field of cell biology, particularly to the study of cell-adhesion proteins," according to AAAS.

Narayan was awarded for "distinguished contributions at the interface of materials engineering and medicine, specifically for increasing collaboration and interaction among medical device manufacturers, biomaterials engineers and clinicians."

Perou receives Hettleman Prize

Charles Perou, associate professor of genetics in the School of Medicine, was among four UNC faculty members who received the 2007 Phillip and Ruth Hettleman Prize for Artistic and Scholarly Achievement by Young Faculty last fall.

Chancellor James Moeser recognized Perou and his fellow recipients at the September 14 Faculty Council meeting. Also awarded Hettleman prizes were: Thomas Hofweber, associate professor of philosophy; Heather Williams, associate professor of history; and Wei Wang, associate professor of computer science, all in the College of Arts and Sciences.

The Hettleman Prize, which carries a $5,000 stipend, recognizes the achievements of outstanding junior tenure-track faculty or recently tenured faculty. The winners will presented their work November 14 at the Carolina Club and will do so again at a spring event.

Chelmenski article explores cultural competency in care

Paul Chelminski, MD, MPH, of the Division of General Medicine and Clinical Epidemiology, recently published an article in *The Annals of Internal Medicine* entitled "Crossing the Cultural Chasm." In the article, Chelminski relates experiences in West Africa and here at UNC to explore ideas of cultural competency and effective communication in the provision of patient care.

Buse elected president, medicine & science of the American Diabetes Association

John B. Buse, MD, PhD, has been elected president, medicine & science of the American Diabetes Association (ADA), the ADA announced last fall.

Buse is a professor of medicine and chief of the division of endocrinology in the UNC-Chapel Hill School of Medicine. He is also medical director of the UNC Diabetes Care Center. Buse will serve as ADA president until his term ends on November 16, 2008.

Buse is the vice chair of the National Institutes of Health's (NIH's) largest ever diabetes study, the ACCORD study, which is aimed at determining optimal treatments for diabetes, blood pressure, and cholesterol in type 2 diabetes. He is a co-investigator in the HEALTHY study, another NIH trial aimed to demonstrate that changing school environments can produce weight loss in middle school children.

Buse is also an active clinician who treats patients both at UNC Hospitals in Chapel Hill and at the Highgate Specialty Center in Durham, which is one of UNC Health Care's community practices.

Stiles recognized for academic service by AAP NC Chapter

Alan D. Stiles, Brewer Distinguished Professor and chair of the Department of Pediatrics in the School of Medicine, was selected by the NC Chapter of the American Academy of Pediatrics to receive its Academic Service Award for 2007.

Stiles was recognized in part for his contributions as a pediatric educator and his leadership in advocating for children's health. The award was presented August 18 during the society's annual meeting in Asheville.

Peppercorn one of two US scholars chosen for grant

Jeffrey Peppercorn, assistant professor of medicine in the School of Medicine, was named a Greenwall Foundation Faculty Scholar in Bioethics. The three-year grant is for $300,000. He was one of two scholars chosen in the United States in 2007 for his research related to access to experimental therapy in oncology.

Peppercorn also recently received a grant, $200,000 over three years, to study health disparities and bioethics. The grant is the American Society of Clinical Oncology Foundation Career Development Award in Health Disparities in Breast Cancer.

Crews receives Distinguished Investigator Award for Scientific Excellence

Fulton Crews, director of the Bowles Center for Alcohol Studies and professor of pharmacology and psychiatry in the School of Medicine, has received the 2007 Distinguished Investigator Award for Scientific Excellence given annually by the Research Society on Alcoholism. Crews received $30,000 to further his research. The annual award is given to individuals who have made an outstanding contribution to alcohol research. Crews' research indicates that cortical brain regions involved in impulse control and planning are damaged during binge drinking and thereby promote progression to dependence. He discovered that risk factors for alcoholism contribute to increased binge drinking-induced brain damage.

IOM elects Peterson to membership

Herbert B. Peterson, professor and chair in the Department of Maternal and Child Health in the School of Public Health and professor in the Department of Obstetrics and Gynecology at the School of Medicine, has been elected to membership in the Institute of Medicine (IOM).

New members are selected from candidates nominated for their professional achievement and commitment to service. Sixty-five new members and four foreign associates were chosen this year, bringing the IOM's total active membership to 1,538.

Peterson is known nationally and internationally for his

work in women's reproductive health, epidemiology, health policy and evidence-based decision-making.

Boucher receives Champion for a Cure award

Richard C. Boucher, MD received the first-ever "Champion for a Cure" award from the Cystic Fibrosis Foundation of North Carolina last October.

Boucher is a William Rand Kenan Distinguished Professor in the UNC School of Medicine and director of the UNC Cystic Fibrosis Pulmonary Research and Treatment Center.

The foundation selected Boucher to be the inaugural winner of what is intended to be an annual award for his dedication to improving treatments for those with cystic fibrosis and his determination in finding a cure for the disease.

Boucher has long been recognized as one of the nation's leading figures in cystic fibrosis research. In 2000, he was among the top 10 in federal funding among principal investigators doing basic research that year, according to the National Institutes of Health.

Key honored with endowed professorship

Nigel Key, MBChB, FRCP, professor of clinical research and co-director of the UNC Program on Thrombosis and Hemostasis, has been named the Harold R. Roberts Distinguished Professor of Medicine in the UNC School of Medicine.

Key's research focuses on the role of tissue factor in disorders of hemostasis and thrombosis, and Key takes a specific clinical interest in coagulation disorders. Key, who came to Carolina in 2005, received his medical education at the University of Manchester, England.

The Harold R. Roberts Distinguished Professorship was established in 2000 with a $1 million gift from Novo Nordisk Pharmaceuticals Inc. The professorship was created to recognize the outstanding contributions of Harold R. Roberts to the field of medicine and specifically, thrombosis and hemostasis.

Gourlay receives awards for research and scholarship

Margaret Gourlay, MD, MPH, assistant professor in the Department of Family Medicine, has been named a recipient of the Junior Faculty Development Award, and has also been selected to receive a James W. Woods Faculty Award.

The Junior Faculty Award will provide Gourlay with $7,500 to be used between January 1, 2008 and December 31, 2008. These funds may be used to provide summer salary and fringe benefits, as well as supplies, equipment, salaries of assistants, travel, or to assist with any other dimension of faculty development. She will also receive $3,000 for the Woods Faculty Award, to be used at her discretion in support of her research and scholarship.

Gourlay joined the Department of Family Medicine in 2002. Her special interest is in osteoporosis prevention and screening.

Institute for Global Health and Infectious Diseases aims to improve lives

The University of North Carolina at Chapel Hill has launched an Institute for Global Health and Infectious Diseases to extend and enhance ongoing research efforts to improve the lives of people around the world.

The institute, based in the School of Medicine, will build on the University's current global health presence in about 50 countries.

Eight full-time UNC researchers and more than 300 local employees are fighting malaria and HIV/AIDS transmission in Malawi. Carolina faculty are targeting the resurgence of syphilis in China and Madagascar and leading an international consortium developing a new oral drug to treat African sleeping sickness, which threatens the lives of millions. Other UNC investigators are active in India, South Africa, the Democratic Republic of Congo, Cameroon, Russia, Thailand, Cambodia, the Dominican Republic, South America and the Caribbean.

Myron Cohen, MD

Peggy Bentley, PhD

"Carolina is a world power in global health," said Chancellor James Moeser. "The new Institute for Global Health and Infectious Diseases builds on our faculty's historic strengths in medicine and public health so that Carolina research will be even more effective in improving and saving lives here and around the globe."

The institute's launch came as the University formally dedicated on University Day, October 12, the FedEx Global Education Center, which brings international education and research on campus under one roof, and follows its co-sponsorship of a global health forum that kicked off last December at Peking University in Beijing. Moeser led a UNC delegation participating in the forum, which will return to Chapel Hill early this year for an event focusing on US health care reform.

Myron S. Cohen, MD, associate vice chancellor for global health in the medical school, has been named institute director. Cohen, the J. Herbert Bate Distinguished Professor of Medicine, Microbiology and Public Health, is a leading expert on the spread and prevention of AIDS. A UNC faculty

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School of Medicine concludes campaign at $600 million

The Carolina First campaign concluded on December 31, 2007, and the School of Medicine ended the eight and a half year effort with more than $600 million in gifts and pledges—$100 million more than the final campaign goal. This amount represents almost 26 percent of the overall campaign total of $2.3 billion. Of the $600 million, $270 million was for research. In addition, more than 55 new professorships were created in the school during the campaign, as well as numerous scholarships and gifts to support ongoing programs.

Alumnus commits $5 million to create medical student scholarships, loan program

Lucius Blanchard Jr., '64 (MD '68), of Las Vegas, has committed $5 million in current and deferred gifts to establish three endowments—two for scholarships and one for a loan fund—to provide need-based financial assistance to deserving students in the School of Medicine.

The Lucius Blanchard Carolina Family Loyalty Fund Scholarships will be awarded annually to first-year medical students with need who will hold the scholarships throughout their four years of medical school.

The same students will also receive the Lucius Blanchard Carolina Family Loyalty Fund Loan Endowment award which will provide Blanchard Scholars with an interest-free loan of approximately $20,000 each per year. Recipients will have up to 10 years after graduation to repay their loans.

As part of his commitment, Blanchard is also establishing the George T. Grigsby Carolina Family Loyalty Fund Scholarship in honor of his long-time friend and classmate. Blanchard practices at the Las Vegas Skin & Cancer Clinics, Ltd.

Glenn bequest to create endowed medical scholarships

J. Eugene "Gene" Glenn, MD '55, and his wife, Ruth Hyde Glenn, have established three $100,000 unrestricted Loyalty Fund scholarships through their will. Two of the scholarships are in honor of their parents; the third will carry the couple's name.

These new scholarships, the George E. and Nora Graham Glenn Loyalty Fund Scholarship, the John T. and Lillie Newton Hyde Loyalty Fund Scholarship, and the J. Eugene Glenn, MD '55 and Ruth Hyde Glenn Loyalty Fund Scholarship, will be awarded, without restriction, to any derserving medical student at the UNC School of Medicine.

Gene Glenn is an obstetrician-gynecologist at St. Vincent's HealthCare in Jacksonville, Fla. Ruth is a former assistant to Bill Friday, who served as UNC president for 30 years. The Glenns have three grown children.

UNC Lineberger meets Challenge gift for cancer research

UNC Lineberger Comprehensive Cancer Center's top priority in 2007—the final year of the Carolina First campaign—was to secure additional funding for its Seed Grant Program, one of the center's most successful initiatives. Two anonymous challengers committed to match 1:1 gifts and pledges to the Lineberger's Seed Grant program up to $1 million. The terms of the challenge, named "The Carolina Capstone Challenge for Innovative Cancer Research," required that the gifts and pledges be $25,000 or more and received before December 31, 2007.

By the end of October 2007, the full $1 million had already been committed. The challenge continued to generate significant interest, and with two months remaining until the December 31 deadline, a third challenger stepped forward to commit an additional $250,000 in matching funds. Once again, Lineberger received enormous support and additional matching gifts.

The Seed Grant program began in 1986 to give faculty the resources they need to set out in new directions and to discover new paths to a cure. The program continues to be highly successful, allowing UNC Lineberger faculty to produce significant new knowledge in many areas of cancer research over the years; and in many cases, use their findings to leverage major funding from conventional sources.

The Carolina Capstone Challenge for Innovative Cancer Research was a resounding success. In just ten months, 48 donors contributed more than $2.5 million for UNC Lineberger's leading edge, high-reward research. As a result of their generous support, the Center will be able to expand this innovative cancer research program for the direct benefit of cancer patients.

Stadler, co-director of Loyalty Fund, retires

The Medical Foundation of North Carolina recently announced the retirement of longtime employee Stephanie Cloninger Stadler, co-director of the Loyalty Fund and a UNC employee for more than 30 years.

Stadler, raised in Shelby, NC, transferred from East Carolina University to UNC and graduated in 1974 with a bachelor of arts degree in psychology. She worked in the UNC School of Public Health from 1978 to 1981. She then served as assistant to the associate dean for clinical affairs and chief of staff of UNC Hospitals from 1981 to 1989. From 1989 through 2000, Stadler served as the executive assistant for medical alumni affairs in the School of Medicine and managed programs funded through the Loyalty Fund, the alumni annual giving program. She assumed her most recent post in November 2000, wherein she worked with medical school alumni and co-directed the alumni annual fund.

Stadler lives in Chapel Hill with her husband, Gary.

50's

R.S. Cline, MD '57, recently received the prestigious 2007 Margaret Hart Hardee Pre-eminence in Aging Award. The award recognizes an older adult in the state of North Carolina whose grassroots advocacy and participation has influenced the making of public policy that supports, protects and empowers older adults.

Richard L. Murtland, MD, FACS, FAAP, (House Staff), at age 82 is still in practice and assists in surgery "almost every day." He lives in Carmel, California.

60's

Giles C. Floyd, MD '62, is semi-retired now; doing part-time office orthopaedics. He lives in Lafayette, California.

James S. Powers, MD '69, currently serves as vice president of medical staff, chairman of the credentials committee, and as member of the board of trustees for Sibley Memorial Hospital, Washington, D.C. He lives in Chevy Chase, Maryland, with his wife, Joan Draper. They have six grown children and four grandchildren. Powers says he has fond memories of his '65-'69 medical studies and classes.

70's

Michael A. Moore, MD '70, was recently honored with the Consortium for Southeastern Hypertension Control Leadership Award by the Consortium for Southeastern Hypertension Control. As the recipient of the award, Moore is recognized as a leader in reducing the risk of hypertension-related diseases of the heart and blood vessels. For more than 30 years, Moore has served as a clinical professor at Wake Forest University School of Medicine, where he received the Teaching Excellence Award in 1979. He is currently the chief medical officer at Danville Regional Medical Center in Danville, Virginia.

Douglas Carroll Tilt, MD '73, has been named the first recipient of the Eleanor E. Kidd Chair by the University of Alabama System Board of Trustees. Tilt joined the UAB faculty in 1991 and now serves as the medical director of the UAB Camellia Medical Group.

Francis Collins, MD '77, director of the National Human Genome Research Institute at the National Institutes of Health, was recently presented with the Presidential Medal of Freedom, the nation's highest civilian award, to recognize contributions in science, the arts, literature and the cause of peace and freedom. Last November, Collins, along with seven other honorees, received the award from President George W. Bush, Jr. at an East Room ceremony at the White House.

Katherine A. High, MD '78, a physician-scientist at The Children's Hospital of Philadelphia, has been elected to the Institute of Medicine. The Institute selected High in recognition of her major contributions to the advancement of medical sciences, health care and public health. The IOM honors professional achievement in the health sciences and serves as a national resource for independent analysis and recommendations on issues related to medicine, biomedical sciences and health. High is the director of the Center for Cellular and Molecular Therapeutics at The Children's Hospital of Philadelphia, the William H. Bennett Professor of Pediatrics at the University of Pennsylvania School of Medicine, and a Howard Hughes Medical Institute investigator.

80's

Ruth A. Etzel, MD, PhD (EPID) '85, received the 2007 Children's Environmental Health Champion Award from the United States Environmental Protection Agency at a ceremony in Washington, D.C. Etzel, medical director for research at Southcentral Foundation in Anchorage, Alaska, received the award in recognition of her outstanding leadership in protecting children from environmental health risks.

W. Eugene Sanders, Jr., MD '85, has been appointed to the newly created position of vice-president of medical affairs and chief medical officer at InnerPulse, Inc., a privately held company specializing in a disruptive technology for the treatment of abnormal heart rhythms. Sanders currently serves as director, Clinical Cardiac Electrophysioilgy and Pacing; associate director, Cardiovascular Diagnostic and Interventional Laboratories; and associate professor of medicine and pathology, Division of Cardiology at UNC Hospitals.

Lisa A. Cooper, MD '88, was one of 24 winners of 2007 MacArthur Fellows Program Grants—chosen for their creativity, originality and potential to make important contributions in their fields. Cooper is an internist, epidemiologist and professor of general internal medicine at Johns Hopkins.

00's

Stephen A. Oljeski, MD '00, accepted partnership with Clinical Associates in Radiology in Erie, Pennsylvania, this past July. He is in private practice at St. Vincent Health Center, Erie.

In Memoriam

Crowell Turner Daniel, Jr., CMED '46, died May 6, 2007 at the age of 84. After earning his Certificate of Medicine at the UNC School of Medicine, Daniel completed his MD degree at the Medical College of Virginia Commonwealth University in Richmond, Va. in 1948. Daniel's specialty was obstetrics and gynecology. He is survived by his wife, Jo.

Henry Joseph Liverman, CMED '48, died August 1, 2007 at the age of 82. Liverman earned his Certificate of Medicine degree at the UNC School of Medicine in 1948 and completed his MD degree at the University of Louisville School of Medicine in Louisville, Ky., in 1950. His specialty was family practice. Liverman is survived by his wife, June.

Richard Eugene Rankin, CMED '48, died July 5, 2007 at the age of 86. He finished his MD degree at the University of Virginia School of Medicine in Charlottesville after earning his Certificate of Medicine at the UNC School of Medicine. Rankin specialized in family practice before retiring to Cramerton, NC.

Frank Crawford Morrison, Jr., MD '55, of Canton, NC, died May 16, 2007 at the age of 78. Morrison's specialty was family practice.

Walter Nathaniel "Walt" Long, Jr., MD '58, of Taylorsville, NC, died June 21, 2007 at the age of 75. His specialty was family practice.

Glenn Edgar Hair, MD '59, died September 19, 2007 at the age of 73. Hair lived in Fayetteville, NC. His specialty was otolaryngology.

James Meyers Powell, Jr., MD '68, of Charlotte, NC, died June 3, 2007 at the age of 66. Powell's specialty was child psychiatry.

William Luther Isley, MD '77, died September 27, 2007 at the age of 56. Isley lived in Rochester, Minn., where he specialized in endocrinology at the Mayo Clinic. He is survived by his wife, Janet.

Debra L. "Debbie" Gibson, MD '01, died September 14, 2007 at the age of 48. Gibson specialized in psychiatry and lived in Carrboro, NC. She is survived by her husband, Steve.

Florence Gray Soltys, a beloved teacher known across North Carolina and the nation as a fearless and tireless advocate for the aged, died September 27. She was 72.

An associate clinical professor in both the School of Medicine and the School of Social Work, Soltys was also an adjunct associate professor in the School of Nursing. She lectured in the areas of occupational and physical therapy in the School of Medicine.

Soltys was the coordinator of the School of Medicine's Hubbard Program, an interdisciplinary home health program training students in medicine, allied health, nursing, pharmacy, social work and dentistry. Each week Soltys took students on visits to elders in the community. Social work students also accompanied Soltys every week when she worked in the Geriatric Evaluation Clinic at the UNC Ambulatory Care Center.

In 2001, she received the University's Distinguished Teaching Award for Post-Baccalaureate Instruction, and in 2006, she received the Ned Brooks Award for Public Service.

Soltys retired from the School of Social Work in May after more than 21 years of service. She died of a heart attack nine days after she was hospitalized for injuries she suffered in an automobile accident.

"Florence was a remarkable teacher and was dedicated to her students and the field of social work services to aging populations and their families," said Jack Richman, School of Social Work dean. "I know first hand how much her inspired teaching meant to her students and also how much her leadership meant to the community."

A native of Tennessee, Soltys earned an undergraduate degree in nutrition and institutional management from the University of Tennessee, then did post-graduate work at Massachusetts General Hospital in Boston. Her academic career was interrupted for a time by her marriage to John Soltys, a retired University physician, and the births of their daughters, Rebecca and Jacqueline.

An editorial in the October 1, 2007, News and Observer referred to the passion, selflessness and courage that she brought to her advocacy for the elderly. "She was simply a presence in North Carolina who cannot be replaced."

A private funeral service was held September 30. Memorial contributions may be made to the School of Social Work for the Florence Soltys Scholarship fund, which was established upon her retirement in June. Contributions should be sent to the attention of Kristen Huffman, School of Social Work, CB#3550, Chapel Hill, NC 27599-3550. Donors should indicate 'Florence Soltys Scholarship Fund' in the memo area of the check

Is There a Doctor in the House?

Continued from page 21

residency programs in other states. And Ricketts says North Carolina needs to recruit even more physicians from out of state until it starts producing more of its own.

"If we expanded medical school enrollment and residency training in North Carolina by 30 percent, we could start matching current trends in population growth in about five years," he said.

The Association of American Medical Colleges (AAMC) has called for a 30-percent increase in physicians educated in US medical schools.

The severity of the current and predicted physician shortage varies greatly among specialties. The outlook is particularly disturbing for general surgery, psychiatry and the primary care specialties of family medicine, general pediatrics and general internal medicine.

"Ten years ago, half of the graduates of our internal medicine residency program went into primary care," Runge said. "Now, that number is less than 10 percent. Nationally, the shortage of the general internists is becoming a crisis.

"General surgery is facing the same problem. General surgeons are needed most in rural areas, but because of medical economics and lifestyle issues, fewer and fewer medical students are making the decision to practice in rural communities."

Runge said neither primary care physicians nor specialists are eager to practice where they are the only doctor and are always on call.

"More and more, young physicians are seeking a balanced lifestyle. This too will have a significant impact on physician availability, particularly in rural areas," he said. "We are in the midst of a sea change in the way medicine is practiced."

Among the most popular specialties today are orthopaedic surgery, radiology and dermatology.

The UNC School of Medicine admits 160 students each year. Roper said the school is exploring the possibility of increasing that number by 50 to 70 over a five- to ten-year period.

"We would educate that additional cohort in Chapel Hill for the first two years, but then have them spend their third and fourth years in Charlotte, if the number is 50, or in Charlotte and Asheville if it is closer to 70," Roper said.

Runge sees that concept as "a very responsible approach."

"The opportunity to expand basic science and pre-clinical training at one site, while offering clinical training in multiple sites, would allow expansion of our capacity to train first-rate physicians without requiring the expense and complexity of creating additional basic medical research programs," he said. "I think it's a tremendous opportunity."

While expanding the size of medical school classes may be necessary to reverse the trend toward too-few physicians in North Carolina, it is only a partial solution, Roper says.

"We also have to expand the number of residency training spots and make sure that a larger number of people graduating from medical schools in our state also get their residency training here," he said. "Repeated studies have shown that where physicians practice long term is determined more by where they do their residency than by where they go to medical school."

The problem, however, is that medical schools and teaching hospitals don't have ultimate control over the number of residencies that are offered. Most residency positions are funded in large part by the Medicare program, and the federal Balanced Budget Act of 1997 placed a cap on the number of Medicare-funded positions. The AAMC and others have called for that cap to be raised or eliminated.

"If we don't increase the number of medical students and the number of residency positions," Runge said, "we will be facing physician shortages in the not-so-distant future."

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Institute for Global Health

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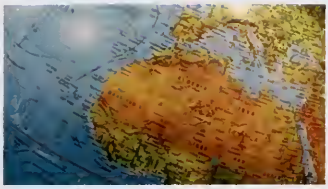

member for 27 years, he has served as director of the medical school's Division of Infectious Diseases since 1989. Peggy Bentley, PhD, associate dean for global health in the School of Public Health, will be associate director of the institutes. A professor of nutrition, she joined the UNC faculty in 1998, is an expert on maternal and child health and nutrition and has worked in several countries around the world.

Cohen said the institute was positioned for success because of the strengths of UNC's interdisciplinary research programs focusing on infectious diseases, nutrition and clean water. Many of those efforts are based in the School of Public Health, which has an Office of Global Health and will become the Dennis and Joan Gillings School of Global Public Health through a $50 million pledge, the single largest in University history, to the Carolina First Campaign.

"The key ingredients in global health include the things we often take for granted: control and treatment of infectious diseases, good nutrition and clean water," Cohen said. "When a country takes control of these issues all things become possible. We have a unique opportunity to build a truly integrated program that can respond quickly as diseases that can affect us all unfold with greater frequency in places like Africa or Asia."

The institute is beginning its work with support from the University and more than $20 million annually in federally funded research grants for ongoing international research projects. Those include UNC's role as one of the lead universities in the National Institute of Allergy and Infectious Disease's Center for HIV/AIDS Vaccine Immunology, part of a major national effort to develop a cure for HIV infection. The new institute has folded in the former Center for Infectious Disease based in the School of Medicine.

Institute goals include promoting collaboration with campus people and programs as well as with international global health organizations in Research Triangle Park, Cohen said. Other priorities include more closely linking global health activities in research, teaching and service in the University's five health affairs schools—dentistry, medicine, nursing, pharmacy and public health—with the College of Arts and Sciences, the Kenan-Flagler Business School and the schools of law, journalism and mass communication, and social work, among others.

The Rest of the Story

Continued from page 15

UNC. Thus, when Denny first envisioned writing a biography about Berryhill and sought help to do so, Blythe "was a natural choice," McLendon said.

Denny, who came to UNC as the second chair of pediatrics in 1960 and served in that capacity for 21 years, had in 1996 just published *From Infancy to Maturity: The History of the Department of Pediatrics, the University of North Carolina at Chapel Hill, 1952-1995*, and was ready to do something else.

"[Denny] felt that Dr. Berryhill had not been recognized for all he had done in getting the medical school established," said McLendon. "So he asked Bill Blythe and me to work with him on a biography of Dr. Berryhill."

The three of them began work in 1997. By 2000, most of the materials had been gathered and three chapters were in very early draft form. Then tragedy struck, not once, but twice. Blythe died on December 21, 2000 following a heart attack. Not more than ten months later, Denny passed away after months of declining health. In less than a year, the School of Medicine had lost two of its greatest pioneers, and McLendon had lost two very dear friends and collaborators.

"At that point I came very close to dropping the project because there was still so much to be done. But the story was so compelling and I felt it needed to be told," said McLendon. He gives his wife Anne much credit, for "without her unselfish support during many of the challenges, this work would never have seen the light of day."

Now, seven years after the project was almost scrapped, with the book published and the positive reviews coming in, one assumes McLendon can take some time off and relax. Not quite.

"The dean has asked me to edit the second volume of the Norma Berryhill lectures. I've delayed a final decision on that, but I probably will start it after the first of the year," he says.

Fortunately, the history of medicine in North Carolina and at UNC remains in the capable hands of doctor, editor, and writer Bill McLendon.

Relevant Reading from UNC Press

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—**Stuart Bondurant**, former dean, School of Medicine, University of North Carolina at Chapel Hill

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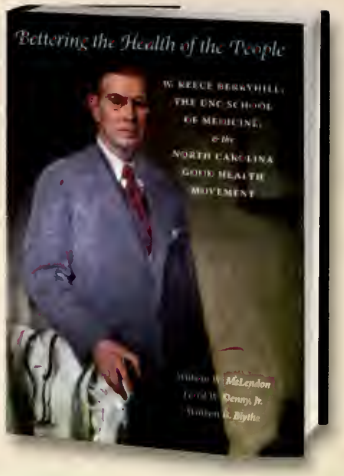

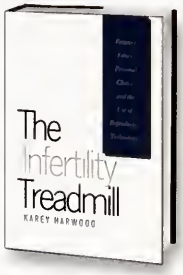

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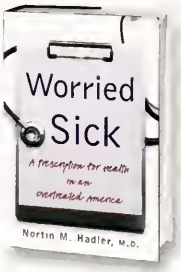

A Death Retold

Jesica Santillan, the Bungled Transplant, and Paradoxes of Medical Citizenship

KEITH WAILOO, JULIE LIVINGSTON, AND PETER GUARNACCIA, EDITORS

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Common threads for **UNC Medical Alumni**

By H. Clifton "Clif" Patterson III, MD '74

I write this at the closing of 2007 during a soaking rain, sorely needed in these parts. It is a reflective time. As president of the Medical Alumni Association, I have had the privilege to reconnect with past and present faculty, administrators, and students. I recall these meetings fondly. Returning to our campus and Chapel Hill tweaks my memory of people and places past that pull at my heart strings, both in a rich and bittersweet way.

Depending on your age, I bet that you'll recall some of these special places. Those no longer existing, but classics: Clarence's Bar and Grill, The Shack, The Scuttlebutt, The Zoom, Thel's Bakery, The Porthole, Monogram Club, Victory Village, Intimate Book Store, McGinty's Sports Shop, Danzinger's, Varley's Men's Wear, Berman's Shoes, Obie Davis Esso and Merritt's Service Stations, and Jeff's ... Those still around: Sutton's Drugs, The Carolina Coffee Shop, The Varsity Theater, and one that is, unfortunately, on hold at present: The Rat.

You might recall some of the following people that I encountered at our most recent alumni dinner: Dr. Colin Thomas, trim bow-tie wearer, who still occupies an office; Dr. Chris Fordham, a fount of information and a living history of our school; Dr. Ernest Craige, our cardiac artist extraordinaire and a cartoonist of World War II fame; Dr. Frederic Dalldorf, a great lecturer with a quirky sense of humor; the energetic Dr. Stan Mandel; the fit Dr. Frank Wilson, who prefers singles to doubles; the fatherly Dr. Bill Easterling; Dr. Robert Brashear; the fearsome Dr. Earle Peacock, a member of the first house staff at NC Memorial Hospital; and finally, Drs. John Foust and "Bud" Harper, our faithful alumni leaders.

Visiting with these individuals and others brought back images of even more you and I knew, characters all: Drs. P.G. Arnold and Noel McDevitt as chief residents; Dr. George Johnson; clever radiologists Drs. Jim Scatliff, Charlie Bream and Earnest Wood; impassioned Dr. Floyd Denny; erudite Drs. Carl Gottschalk, Bev Raney, Paul Bunce, George Penick, John Graham, John Sessions, Judson Van Wyck—they "broke the mold." Also, Drs. Newton and Janet Fischer; our unique anatomy professors Drs. Charlie Hooker and C.D. Van Cleave; amiable and brilliant Dr. Kenneth Brinkhous; the infirmary staff, Drs. Robert Lindsay, Bill Morgan, Ned Hedgpeth, Tyndall Harris and Jimmy Taylor; and at one time, our young academic all-stars Drs. Edgar Garrabrant, Paul Biggers, Hank Lesesne, Knight Stool, William Heizer, and John Croom.

I realize that this covers one, perhaps two, generations, but should you return and visit, as you also will be flooded with fond memories. It is our common thread, what makes this place "like no other." Return this April 18-19 for our next medical alumni gathering and find out for yourself.

Patterson is president of the UNC Medical Alumni Association. He lives in Raleigh.

Spring Medical Alumni Weekend
April 18-19, 2008
Chapel Hill, N.C.

Classes from years ending in "3" and "8" will celebrate reunions, however all alumni are encouraged to attend the events.

1958 1963 1968

1973 1978 1983

1988 1993 1998

For more information, visit http://www.med.unc.edu/alumni or call (919) 962-8891. Please make sure that you make your hotel reservations early, as area hotels will fill up quickly as the date approaches.

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UNC MEDICAL BULLETIN

SPRING 08

Trialed and True: Supporting Clinical Research at UNC

P4

Creating a CAROLINA LEGACY

Photo by Steve Exum

FITCH (*left*) AND WILCOX

Professorship Honors Friendship

R.B. FITCH HONORS LONGTIME FRIEND BEN WILCOX WITH ENDOWED PROFESSORSHIP IN CARDIOTHORACIC SURGERY

FOR THE FIRST 30 years of their friendship, Ben Wilcox always whipped R.B. Fitch on the tennis court. But 10 years ago they switched to golf, and now Fitch is making a comeback.

FITCH '55 JOKED that he's using all the money he's won on the golf course to fund a gift to the Carolina First Campaign. In reality, he used appreciated stock to fund a charitable remainder trust that will ultimately endow the Benson R. Wilcox Distinguished Professorship in Cardiothoracic Surgery, in honor of his friend. Wilcox '53 '57 (MD), an expert in congenital heart disease, pediatric cardiac morphology and pediatric chest disease, has worked at the UNC School of Medicine since 1963. From 1969 to 1998, he served as chief of the Division of Cardiothoracic Surgery.

WHEN HE WAS considering making a gift, Fitch said, he wanted to give to UNC Hospitals, honor Ben and convert some appreciated stock into retirement income. So he created a charitable remainder trust, which pays him income for life. In addition, he received a sizable income tax charitable deduction. At Fitch's death, the proceeds of the trust will be used to fund the professorship. He called the gift a win-win-win proposition. "It was just the thing to do," he said.

FITCH, WHO IS developing Fearrington Village south of Chapel Hill, said he has always been impressed by his friend, whom he met in the early 1960s when their families lived across the street from each other. "I like to be associated with people on top of their game," Fitch said. "And he was always on top of his game in cardiothoracic surgery." Wilcox, who operated on more than 2,000 children during his career, has retired from the operating room but remains a professor in the Department of Surgery.

A LIFELONG Chapel Hill resident, Fitch said he feels like he's grown up with UNC Hospitals. Fitch's father, R.B. Sr., and wife, Jenny '60, were treated there. Wilcox operated on Fitch's father most of one night, and Jenny fought a long battle with breast cancer before her death in 1995. "Anything having to do with illness or the hospital, Ben was my go-to guy," Fitch said. "Every time I turned, there was Ben."

If you're interested in a "win-win-win" proposition that could increase your income, save taxes and benefit the UNC Hospitals or School of Medicine, please contact Jane McNeer, vice president of The Medical Foundation of North Carolina, Inc., at 919-966-3946 or 800-962-2543 or Jane_McNeer@med.unc.edu.

The Berryhill Society

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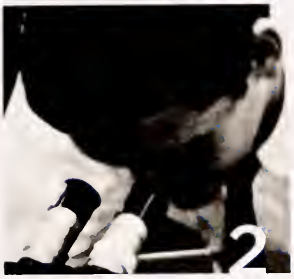

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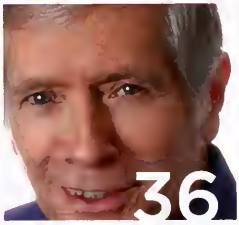

36 100% OF THIS STORY IS TRUE

The *UNC Medical Bulletin* is published for the alumni and friends of the University of North Carolina School of Medicine and UNC Health Care.

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ON THE COVER

The Carolina Center for Clinical Trials is one of many on-campus resources designed to help researchers with their work. See story on page 4.

Photo by Edward Byrnes

Designed to inform and inspire

Throughout its 55 years of existence, the UNC Medical Bulletin has had many names and sought to accomplish many goals. Now it has come back to its roots...

BY EDWARD BYRNES

UNC School of Medicine Dean W. Reece Berryhill's effort to establish a public relations office for the medical school and the North Carolina Memorial Hospital ran into a major roadblock when the proposal was vetoed by the Division of Health Affairs in the early '50s. Berryhill responded to the veto by supporting the creation of *The Bulletin of the School of Medicine* magazine as a partial alternative in 1953.

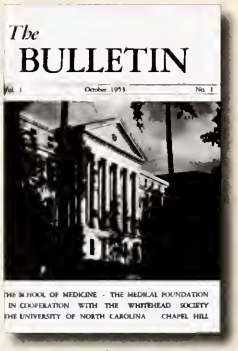
The seeds of the publication were planted at least three years prior when, on January 1, 1950, C. (Charles) Sylvester Green was hired as the first executive director of Medical Foundation of North Carolina, Inc. The foundation had been chartered less than a year earlier, on May 28, 1949, to address the growing need for an organization to raise private funds for the school and hospital.

Green, a former president of Coker College and editor of the *Durham Herald*, understood the need for external relations for the foundation to be successful in raising the funds the school needed to thrive and grow. Consequently, the foundation co-sponsored the founding of the *Bulletin* with the endorsement from Berryhill.

The first issue appeared in October 1953, with a nine-member editorial committee featuring names that remain well-known and venerated some 55 years later, including Earnest Craige, W.D. Huffines, and Berryhill. Green, with his strategic interest in the magazine's success and his experience as a newspaper editor, also took a seat on the committee.

The stated purpose of magazine was to improve relations with the public and better inform UNC's medical alumni on the affairs of the medical school that, at the time, was undergoing massive change and would graduate its first class of four-year MD students the following year.

In the early days of the *Bulletin*, it measured a modest 9 inches by 6 inches, contained 40 total



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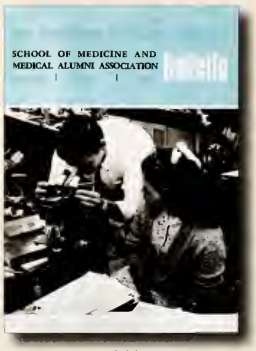

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pages, and was printed in black ink with halftone photos and simple illustrations. Almost every issue featured a message from the dean, various essays from faculty, and the "Alumni Notes," "With the Faculty," "House Staff Notes" and "Student Activities" departments.

Throughout its first decade, the *Bulletin* was a steady, unchanging, reliable source of news for faculty, students, and alumni. In the late '60s, besides introducing spot color and expanding its dimensions to 8.5 inches by 11 inches, the most significant change to the *Bulletin* was the change of its name to *The School of Medicine and Medical Alumni Association Bulletin*, which conspicuously reflected its newly heightened emphasis on subject matter of particular interest to its alumni audience.

These slight, gradual changes were precursors of more change to come in the 1970s, '80s, and '90s. As the medical campus at UNC changed, evolved, and grew, so too did the *Bulletin*. It would undergo more name changes (from *The School of Medicine and Medical Alumni Association Bulletin*, to *School of Medicine Bulletin*, and finally to the *Medical Alumni Bulletin*) as its editors tried to keep up with the demand for a publication that would serve the many diverse yet related audiences of the organization as it experienced tremendous change and growth.

A new era for the *Bulletin* began in the mid-1970s, when editorial control of the magazine was transferred from an editorial committee made up mostly of medical faculty and administration to a small one- or two-person editorial staff overseen by the UNC Hospitals' director of public relations. As the editorial focus shifted further to its external audience, the design became more sophisticated, and the magazine began to include more human-interest stories, full-color cover photographs and illustrations, and feature articles written by freelance writers and UNC Hospitals public relations staff. The *Medical Alumni Bulletin* once again seemed to have found its niche and truly reflected its title strictly as an alumni magazine through the 1980s and '90s.

The *Bulletin* underwent a design overhaul in 2001 that introduced full color throughout, glossy paper, a new masthead, a fresh, colorful design, and in 2003 it was once again given a new name, simply *The UNC Medical Bulletin*. Three years later, in spring 2006, School of Medicine Dean William Roper, MD, MPH, new Medical Foundation President David Anderson, and Vice President of Public Affairs and Marketing Karen McCall began discussions to revamp the magazine. This time the changes would be significant. Their goal was to redesign the *Bulletin*, refocus its content, and hire a full-time editor to elevate the magazine and ensure its place as the flagship publication of UNC Health Care and the School of Medicine.

I was hired for that duty in March 2007. Within a few weeks of coming aboard, I wrote a mission statement for the magazine. Only after I had finished did I discover the vision statement hidden in the back of the *Bulletin's* inaugural issue some 55 years ago. It ran under the heading "Designed to Inform and Inspire," and is much more concise than my 21st century version, but as I discovered, the message is exactly the same:

The BULLETIN is designed as a medium of cordial communication among the

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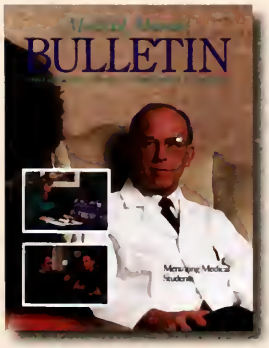

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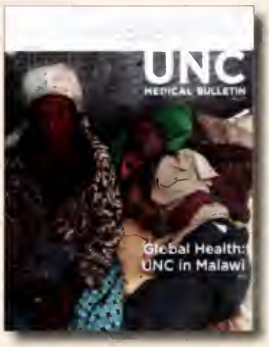

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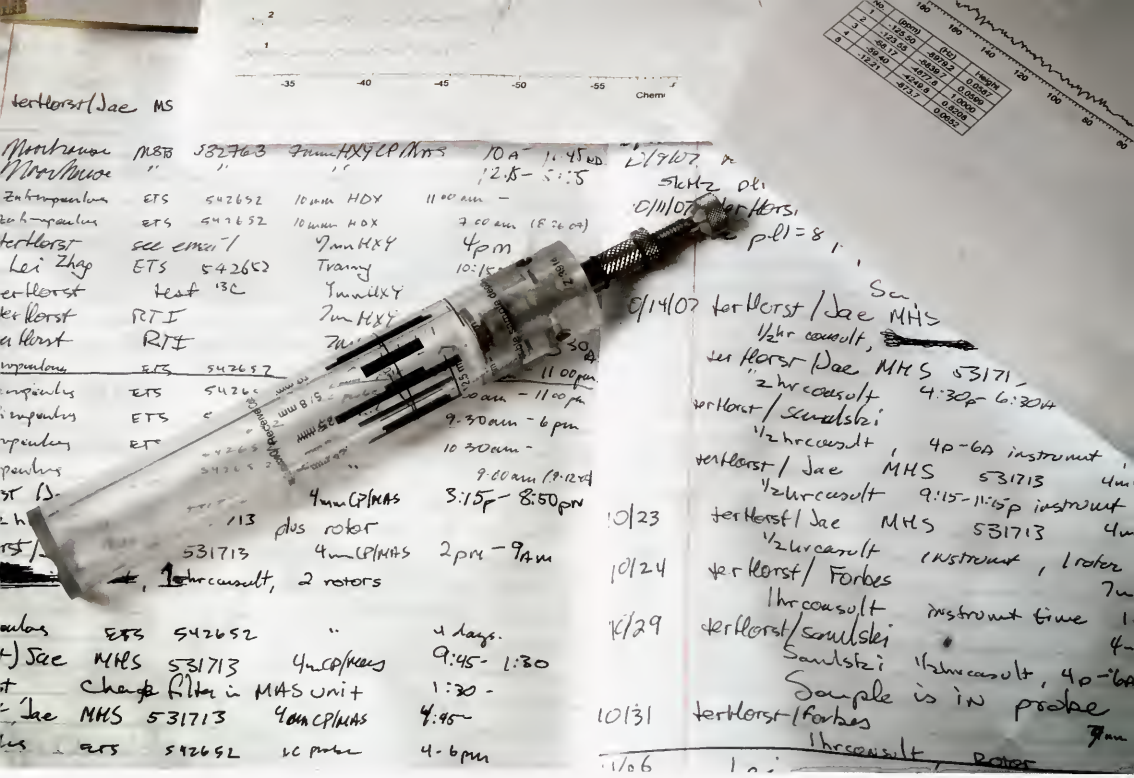

Photo by Dan Sears

Trialed and True

Clinical researchers at UNC have seen a growth in the resources available to them to help them carry out their work—and the rewards are beginning to show.

BY ANGELA SPIVEY

In January 2008, ***U.S. News and World Report*** announced "Digital Mammography Better for Some Women," and CBS News trumpeted "Epsom Salts May Cut Cerebral Palsy Risk." Then, in February, Raleigh's WRAL-TV reported "Exercise is Great Arthritis Medicine."

Behind all those headlines were researchers from the UNC School of Medicine.

The arthritis trial, for example, was conducted at 18 sites around North Carolina and led by Leigh Callahan, PhD, research associate professor of medicine (rheumatology) and associate director of UNC's Thurston Arthritis Research Center. When the Centers for Disease Control (CDC) went looking for an investigator to evaluate the People with Arthritis Can Exercise (PACE) program, Callahan was one of eight researchers who responded to a request for proposals, and she was chosen to do the work. The study of 346 people provided hard evidence that light exercise eases arthritis and led to the CDC endorsement of the PACE program.

Now, the CDC wants the National Arthritis Foundation to evaluate a Tai Chi program for people with arthritis, and they've tapped Callahan for that as well. "We now have a recognized strength in doing this," Callahan says.

Callahan is one among many UNC School of Medicine investigators who are known for their expertise and are sought after to evaluate treatment programs and medications—and generate results that get translated into better health care.

"We have investigators who are both national and international experts in their fields. I can't really think of an area of a medical specialty where UNC's faculty don't conduct trials," says Barbara Longmire, RN, director of UNC's Office of Clinical Trials (OCT).

The university doesn't keep statistics on the number of dollars that flow in just from clinical trials. But the OCT processes a growing number of contracts for trials—from fiscal year 2002 to fiscal year 2007, the number of contracts more than doubled, from 370 in 2002 to 775 in 2007.

In addition to lending their expertise to trials for non-profits, government agencies, or industry, School of Medicine researchers launch trials to test their own ideas for improving medicine. Longmire says that an increasing number of the trials conducted by the school are initiated by the investigators themselves.

For example, Mike Fried, MD, professor of medicine (hepatology), investigates the mechanism behind the current treatments for hepatitis C (interferon and ribavirin) and why only 50 percent of patients respond to them. In 2007, Fried and colleagues published a trial in the journal *Hepatology* that links patient response to treatment with expression of particular genes. He also published a study in 2006 conducted at eight centers around the country that examined why African Americans and whites respond differently to hepatitis C treatment. The study confirmed that white patients show double the response rate of African Americans. "There are huge differences even with the exact same medications," Fried says. "So far we don't have the smoking gun." Both these studies were funded wholly, or in part, by the National Institutes of Health.

Additionally, Etta Pisano, MD, vice dean of academic affairs in the School of Medicine, has for years worked to improve breast cancer imaging and diagnosis. In January 2008 she made national headlines with her study showing that women under 50, who have dense breasts and who are perimenopausal or premenopausal, benefit most from digital mammography over traditional film mammography.

John Thorp Jr., MD, Hugh McAllister Distinguished Professor and division director of obstetrics and gynecology, was one of the researchers behind the national study that showed that administering magnesium sulfate (Epsom

Creating an Outreach Network Across NC

UNC researchers and clinicians will partner with community physicians and clinics across North Carolina to move research into practice and provide citizens with the best cancer services available. These partnerships will help translate laboratory discoveries into improved care for individual patients as well as the population at large, through clinical trials, prevention, survivorship, and screening programs.

These collaborations will complement a network of physicians and centers that UNC will establish research agreements with to improve access to enrollment of patients onto clinical trials throughout the state, said Dr. Thomas Shea, UNC Lineberger associate director of clinical outreach. "This network will ensure a higher quality of care for more patients while allowing physician scientists and practicing community oncologists to collaborate in testing novel therapeutics that will lead the way for better outcomes in the future. It will also allow more patients to participate in these trials that will make new and, we hope, better treatments more widely available."

One special focus of this effort is the collaboration with East Carolina University to further their development of a strong cancer program for eastern North Carolina. Additionally, a pilot project has begun with patient "navigators"—health care professionals who will serve as community facilitators for cancer care in Dare County. They will help individual patients to find physicians and support services while working with existing community-based groups to develop programs in cancer screening and education. While these Dare County navigators will be UNC employees, they will not be linked exclusively with UNC programs. Instead they will be expected to access the best available resources for an individual patient as well as help identify where the need might exist for new programs. The hope is that this pilot program will serve as a model for other communities that wish to enhance the quality of their cancer services.

salts), just before delivery, to pregnant women at high risk of preterm birth cuts the rate of cerebral palsy in half. UNC was one of 20 sites that conducted the study for the Maternal-Fetal Medicine Units Network of the National Institute of Child Health and Human Development. Thorp sits on the steering committee that decides the research priorities for the network. He says this is increasingly the manner in which government-funded research gets its direction.

"The National Institute of Child Health and Human Development is moving toward grant awards that are structured like pharmaceutical company contracts with a capitated payment system, where one enrolls subjects into trials and gets paid on a per-subject basis," he says.

Like many researchers, Thorp not only conducts trials for government agencies such as the NIH, but also evaluates drugs and other treatments for pharmaceutical companies and other industries. For instance, he's conducting an industry trial of an antidepressant molecule that may improve the female libido. "I have expertise in getting people enrolled into trials and getting trials completed," Thorp says. "So the pharmaceutical companies seek us out, and we play this dance together."

Thorp says there's always room for improvement, because Carolina competes for trials with private research organizations. "They can move so much faster than we can," Thorp says. "To get a contract out of UNC is a hard thing to do. We may be as fast as Duke, but I think we're slower than a lot of our competitors."

Thorp uses clinic space and staff in the clinical trials unit of the Department of Obstetrics and Gynecology, while other investigators mine resources offered by the School of Medicine, such as the Verne S. Caviness General Clinical Research Center (GCRC) and the new Carolina Center for Clinical Trials (CCCT). Other pockets of space and resources exist, such as the AIDS Clinical Trial Unit, headed by Medical Director Joseph Eron, MD, and funded by the National Institutes of Health since 1987.

While such facilities help, companies and

Photo by Paul Camarena

foundations come to Carolina to get trials conducted because of the expertise of the faculty, Longmire says. "Our faculty are absolutely our strength; they are some of the best clinical investigators in the world," she says.

If faculty expertise attracts trials, the research nurses and coordinators help drive Carolina's success in getting them completed, Thorp says. "Relationships between the research nurse and the study subject are what gets and keeps participants in clinical trials," he says. "There are a whole cadre of research nurses within the School of Medicine who are the real heroes of the enterprise."

Barbara Eucker, RN, has worked with Thorp as a research nurse. For the past 15 years she has served as a manager of research nurses and is listed as an author on some of Thorp's publications. Eucker has seen the growth of clinical trial research at UNC and the improvement of the systems that support it. The restructuring of the School of Medicine's Institutional Review Board, which must approve applications for trials to ensure the safety of human participants, has shortened the time it takes to launch a trial, she says. "That process has gotten better organized, and the Office of Clinical Trials acts as a resource and a guide, and they've helped streamline things," Eucker says.

GCRC and CCCT support clinical trials at UNC

The University and the School of Medicine support clinical trial research in several ways.

The Office of Clinical Trials processes contracts and other paperwork involved with trials funded by industry or non-profits and offers services to investigators and research coordinators such as training in how to run a trial. Training topics include budgeting and quality assurance. These services are offered to investigators through the University.

The Verne S. Caviness General Clinical Research Center (GCRC) offers School of Medicine researchers more than 15,000 square feet of inpatient and outpatient facilities, as well as support such as a nutrition service and training and expertise in biostatistics. A mainstay for many clinical researchers at Carolina, the GCRC is supported in part by a grant from the National Institutes of Health General Clinical Research Centers program, and received its initial NIH funding in 1960. Paul B. Watkins, MD, directs the center.

The Carolina Center for Clinical Trials (CCCT) is new on the scene; it opened in March 2006 to provide additional space and services for conducting industry-sponsored trials. The center offers 15 exam rooms for outpatient visits, as well as trial coordination and other services. Michael Fried, MD, directs the CCCT. "We're trying to augment the good infrastructure that is already here and augment it with additional services to help new investigators navigate the system," he says.

About 90 studies are currently being conducted at the CCCT's facilities. It received startup funding from Quintiles, a private contract research organization, and about five percent of the studies conducted there are sponsored by Quintiles, says CCCT Administrative Director Barbara Dahl.

The center provides services on a fee basis for physicians who don't have the resources to do the regulatory paperwork and study coordination that is required to run a clinical trial. Two research coordinators are available, and Dahl and one other staff member can help with completing the regulatory paperwork, such as getting human subjects approvals and formulating and negotiating budgets. "Investigators can use a portion of the CCCT's research coordinators' time so they don't have to pay a full-time coordinator," Dahl says.

The CCCT staff includes clinical research coordinator (CRC) Trevor Presler, Beverly Perry, CNAII, Erika Hanami, CRC, Administrative Director Barbara Dahl, Michael Fried, MD, and Jennifer Rees, RN. Photo by Edward Byrnes

For more information about the CCCT, visit http://tinyurl.com/4sv9o8.

Leveling the literacy playing field

The Center for Literacy and Disability Studies is creating a new framework for literacy education that will inform the next generation of researchers in the field

BY DICK BROOM

It isn't often that a small group of researchers at one university gets to build a new field of study from the ground up, but that is essentially what the faculty of the Center for Literacy and Disability Studies (CLDS) in the Department of Allied Health Sciences is doing.

The Center is one of only two research organizations in the English-speaking world dedicated exclusively to improving the literacy assessment and education of people with developmental disabilities. The other one, in the United Kingdom, focuses only on people with Down syndrome.

Building on their groundbreaking research, members of the CLDS have developed novel ways of teaching reading skills to children and adolescents who traditionally have been considered permanently illiterate. They include people with autism, Down syndrome and cerebral palsy.

"One of the unique things we have done with children who have developmental disabilities and intellectual impairment is to think of literacy as a tool, not an end in itself, the same way we do with anyone else," said Karen Erickson, PhD, director of the CLDS. "There is a long history of teaching these children words so you can demonstrate that they can read words, as opposed to teaching them how to read words so they can use that skill to get meaning and communicate meaning to others."

Erickson and her CLDS colleagues conduct much of their research with an eye toward development. They have worked closely with companies in the field of educational technology to develop products based on their research findings.

"Traditionally, you get your research dollars, you do the research, and after you figure out that you have an intervention that's successful, you look for a commercial partner, and that can take years," Erickson said. "We work with the commercial sector from the beginning so that, when we are finishing our research, we've got a product that's ready to go to market."

The most recent product to emerge from the CLDS's work is actually a blending of two products by two different companies. Don Johnston Incorporated has a series of books for adolescent beginning readers called Start-to-Finish Literacy Starters. The books are written at a kindergarten or first-grade level, but they deal with topics that are age-appropriate for teenagers.

Another company, AbleNet, Inc. has a product called the MEville to WEville Early Literacy and Communication Instructional Program. It is a comprehensive educational program that combines reading and writing activities with art projects,

Dr. Karen Erickson (far right) talks to students in her Augmentative and Alternative Communication class. All of the students are second-year graduate students in the Speech and Hearing Sciences' MS program. Photo by Paul Braly

games and relationship-building exercises.

"We were working separately with these two companies on these products under non-disclosure agreements, so we couldn't tell one company what we were doing with the other one," Erickson said. "I was chomping at the bit to merge them because it was clear that if we brought them together we would have some really powerful synergy. As soon as the two products hit the market, we started working to get the companies together."

That effort, appropriately called Project Converge, was funded by a grant from the US Department of Education. The result is a new product called the MEville to WEville with Literacy Starters Program. The merging of the two products was achieved with new technologies developed jointly by the CLDS and the two companies.

"This new product is the first of its kind; it's a comprehensive, multi-year instructional program for children with very significant disabilities," Erickson said. The first copies of the new product were shipped April 1.

The primary research component of Project Converge was one of the largest studies ever to focus on literacy education for children with moderate to profound intellectual disabilities. The semester-long study involved 107 children in North Carolina and Florida.

"We got very impressive results with a population of children in which you wouldn't expect to see dramatic improvement in one semester of intervention, particularly literacy intervention," Erikson said.

Thirty-five percent of the subjects in the study were children with some form of autism. Most literacy programs for people with autism emphasize rote repetition and practice.

"Our approach to instruction is much more like what you would see in a typical elementary school classroom," Erickson said. "The materials are

at the beginning level, but they are interesting to older students because we need to be respectful and thoughtful about what is relevant to them. Our view is that nearly all children have the ability, when the instruction is supportive enough, to figure things out and be actively engaged as learners."

While research is the primary function of the CLDS, its members also are engaged in teaching and supporting best practices in literacy education for people with disabilities.

Under a contract with the North Carolina Department of Public Instruction's Deaf-Blind Program, the CLDS has established model demonstration classrooms in four counties to implement the most effective strategies for literacy and communication instruction for students who are deaf and blind. Teachers from across the state can visit these classrooms and learn how to address the communication needs of students whom Erickson describes as "the most complex kids our public schools have to deal with."

The CLDS also supports a system of 10 pre-K model demonstration sites through a contract with the Department of Public Instruction's Exceptional Children Division and the governor's Office of School Readiness. The project focuses on 4-year-olds with and without disabilities.

"As with the deaf-blind model sites, the purpose of the pre-K demonstration classrooms is to provide places where teachers can see really good practices in action and interact with the teachers," Erickson said.

Each summer, the CLDS conducts four week-long literacy education courses for North Carolina teachers whose students include children with disabilities. The center's faculty also offers one- and two-day training sessions for teachers.

For several years, members of the CLDS faculty have led symposia for teachers, therapists and parents of developmental disabled children at the Center for Autism and Related Disorders at the University of Florida. An attendee at one of those symposia a few years ago was Judy Jennings, a special education teacher at Ephesus Road Elementary School in Chapel Hill.

"I had nine kids in my class with significant disabilities and I knew I could teach them better. I just didn't know how," she said.

The CLDS experts showed her.

"They combine what speech therapists know about language development with good, balanced literacy instruction and research-based strategies for teaching general education students," Jennings said. "On top of that, they find ways of making communication devices work with computers to enable kids not only to 'speak' but to read and write, and in a way that those skills all develop together and support each other."

Stephanie Brown of Plant City, Fla., is another former symposium participant. Her 10-year-old daughter, Jordan, has cerebral palsy with speech impairment and physical disabilities.

"Karen (Erickson) has developed a framework (for literacy education) that can be applied no matter what the curriculum is, no matter what the learning style of the child is," Brown said. "She is really a champion for these children. I would be president of her fan club, if there was such a thing, as would many parents."

Brown currently serves on the President's Committee for People with Intellectual Disabilities.

One of the ways Erickson and her colleagues gain insight into teaching children with disabilities is by working with children who do not have identified disabilities but, nevertheless, are struggling with reading and writing. For example, the CLDS is providing support and training for teachers in grades three through five at Forest View Elementary School in Durham, helping them develop more effective ways of meeting the literacy needs of students who are falling behind.

Last year, the CLDS helped the Richmond County Schools land a four-year, $3 million Early

Dr. Erickson mugs for the camera with Jake (left) and Bonnie (right), who had just met for the first time at a CLDS open house. Both children have been involved in different research and education efforts through the Center. Photo by Gretchen Hanser

Reading First grant from the US Department of Education to develop literacy education programs for 4-year-olds. The project includes children from 20 pre-school classrooms, many of whom have disabilities.

"It is the only Early Reading First grant that has ever been awarded for a project that includes children with very severe disabilities," Erickson said. "We wanted to have those children in the study because that's who we are and what we do."

By working with both disabled and non-disabled children, teachers and CLDS faculty can develop strategies and tools that are the most effective for both populations, she said.

"We can develop an intervention for typical 4-year-olds, then go in and try it and have a good sense within a week of whether it's going to work," Erickson said. "Then, when we start to use it with children with severe disabilities, we know the core of the instruction is sound. We just need to figure out how to make it accessible."

The CLDS has five faculty members including Erickson and four affiliated faculty members. The center has now trained three doctoral students, significantly increasing the number of specialists in the field.

"We are building a field," Erickson said. "We are producing the PhD researchers who are going to inform how we help an incredibly difficult population of children to read and learn."

For the greater good

UNC's Dr. Nortin Hadler is striving for better, rational health care

BY EDWARD BYRNES

Nortin Hadler, MD, is a professor of medicine and microbiology/immunology at UNC's School of Medicine and the Thurston Arthritis Research Center, and an attending rheumatologist at UNC Hospitals. Photo by Paul Braly

Nortin Hadler, MD, is the son of an immigrant father from Ukraine who graduated from Harvard Medical School in 1929. His father decided late in life that he should get married and have a son to send to medical school with the advantages that he didn't have. "I was brought into this world to be a physician. That's been my entire career focus all my life, literally. I was on rounds when I was 6 years old. I went to work in a hospital when I was 11 ... For me, medicine was a citadel on the hill that existed for service," Hadler says.

Hadler did graduate from Harvard Medical School in 1968, AOA *cum laude*. He has spent 35 years practicing medicine at UNC as a professor of medicine and microbiology/immunology at the School of Medicine and the Thurston Arthritis Research Center, and an attending rheumatologist at UNC Hospitals. "You don't get much more senior than that," Hadler quips, then continues. "I like it, it is home. I have been involved in the education of a lot of people. I value colleagues who pursue clinical excellence against odds. For me, what happens at the bedside is primary."

For much of his career, Hadler has been a student of "the illness of work incapacity." He challenges employee disability and workers' compensation insurance schemes that encourage the medicalization of inevitable, yet transient, life predicaments such as low back pain. Hundreds of speaking engagements, visiting professorships far and wide, multiple awards, more than 200 papers and 14 books, as well as several appearances in evidentiary hearings before Congress bear witness to his passion for worker health and safety.

Striving for rational health care

Widely regarded, and sometimes challenged, for his critical assessments of the clinical indications for some major medical procedures such as bypass surgery, as well his recasting of fibromyalgia and restless leg syndrome as social constructions, Hadler's viewpoints command attention.

"I am intent on figuring out what can be done to make our health care system rational. I've spent a tremendous amount of time understanding how

the system really works and understanding what I can and cannot accomplish. I am a very ineffective politician: I tolerate fools poorly. I feel compelled to speak my mind and to act according to my conscience," he says.

Worried Sick

His new book, *Worried Sick: A Prescription for Health in an Overtreated America*, was recently published by UNC Press and picks up where his previous book, *The Last Well Person: How to Stay Well Despite the Health-Care System* (2004), left off. In both books, Hadler seeks to influence the health care policy debate and establish a new standard for bedside teaching—goals he acknowledges are ambitious, but overdue.

Worried Sick is based on two trends that Hadler believes are the major stumbling blocks to rational health care in the United States. The first is "medicalization," the labeling of transient pain or discomfort as a condition that requires and can be alleviated by medical intervention. "There are predicaments in life, some severe and quite challenging, that should be considered medical problems only if you're advantaged by the clinical labeling. We have a robust literature that details when this labeling is inappropriate," he says.

The second trend identified in *Worried Sick* is what Hadler calls "Type-II medical malpractice," which he says is rampant in this country. "Type-I medical malpractice is the type we're used to thinking of—it's doing the necessary poorly. Type-II medical malpractice is doing the unnecessary even if you do it very well. And any medical intervention is unnecessary if it won't benefit the patient."

According to Hadler, health care is a philosophy that can be informed by science—but it will always remain a philosophy. "The notion that medical practice should take advantage of whatever science has to contribute is not controversial. That notion is a tenet. However, evidence-based medicine has become a shibboleth rather than a process. All I am asking is that we closely examine the 'evidence' as to its relevance to the well-being of any particular patient," he says.

With *Worried Sick*, Hadler hopes to teach people how to assess their own life predicaments and their approach to their own health care, and in the process demystify much that is common practice while enhancing the physician-patient

CONTINUED ON PAGE 35

Nortin and Carol Hadler stop beside the Danube River during a recent cycling trip from Prague to Vienna. The Hadlers travel around the globe, as well as within the United States, to find great places to [illegible]
Nortin Hadler

Climbing for cancer

Cancer survivor Harriet Farb has faced and overcome some of life's—and the physical world's—biggest obstacles.

BY EDWARD BYRNES

Farb (foreground) leads the way up Kilimanjaro. Photo courtesy of the Climb for Cancer Foundation

The freezing January winds of Kilimanjaro swirled and gusted at almost 100 miles an hour as mountain guide Mark Fisher carefully negotiated every step of his way between the smattering of tents in the small, dark camp. Fellow climber Ron Farb sat in his tent, listening as the approaching footsteps took hold in the crunchy scree. Ron unzipped his door flap and looked up to see Mark's silhouette against the moonlit night sky. "I think we're going to try to reach the summit tonight," Mark announced.

Ron, an experienced climber who has climbed Mt. Everest in Nepal, Mt. McKinley in Alaska, and several other major peaks across the globe, was hesitant. Farb was responsible for a small group of six amateur climbers who had joined him on this climb to raise money for the Climb for Cancer Foundation he founded five years ago with his wife, Dianne. One of the amateur climbers with him that night was his older sister, Harriet.

Harriet, a registered nurse, had slept the previous stormy evening in a tent that had collapsed around her as a result of the high winds. A life-long fitness enthusiast (sometimes taking as many as five spinning classes every week), she rarely passes on a physical challenge. Even after she was diagnosed with breast cancer in 1989 at age 57, her subsequent surgery, radiation and medication therapies barely slowed her down.

Mount Kilimanjaro is an inactive stratovolcano in northeastern Tanzania. At 19,340 feet, it is the highest peak in Africa. Photo by Capt. Rob Marshall, USAF

In 1998, nine years after her initial diagnosis, Harriet became ill while exercising one day. She believed it might be a heart problem and went to see a cardiologist. Instead of finding a problem with her heart, doctors discovered that her cancer had metastasized to her liver. She was put on a different medication and was told that the prognosis was not good. Harriet was told that she may have only two years left.

Harriet, who enjoyed her work and has always enjoyed keeping fit, balked when doctors told her to quit her job, quit working out, stop her spinning classes and to begin preparing for the worst. Instead, she traveled to the Dana-Farber Cancer Institute in Boston for a second opinion.

"I think [the doctor at Dana-Farber] expected to see somebody weighing 98 pounds and on their way out. He took one look at me and said 'No. Keep working, keep working out, and keep doing whatever you're doing ... because it's working for you,'" said Harriet.

Doctors determined that her tumors were feeding off of estrogen, so she was put on an oral medication that suppressed the hormone. The following year, Harriet moved to Raleigh and began treatment at Duke University Medical Center.

"By the time I got to Duke, they were pretty amazed. I was improving and improving and improving," says Harriet.

She was treated at Duke for two years, until a change in her insurance coverage prevented her from continuing treatment there. Her Duke physician, Dr. Paul Kelly Marcom, recommended that she continue her treatment with Dr. E. Claire Dees, associate professor and clinical researcher in hematology and oncology at UNC and a faculty member of UNC's Lineberger Comprehensive Cancer Center.

"It was the best thing that ever happened to me," Harriet said.

In June of last year, while Harriet was in remission, she decided to join her brother for a January 2008 climbing excursion on Mt. Kilimanjaro to raise money in appreciation for the treatment she was receiving at Lineberger. A few days later, new cancerous lesions were discovered on her liver. The Herceptin infusion therapy she was getting had lost its effectiveness—she had active disease again. Harriet was given a new treatment protocol, but it was a new and expensive drug that wasn't readily available.

Despite the recurrence of her disease and the difficulty in getting the medication she needed, Harriet began training for the climb by hiring a

dietician, taking walks with a weighted backpack, and working out on a Bowflex TreadClimber. By October, she was finally able to get and begin taking her new medication.

"I had to go on this new medication protocol and it kicked my butt. It was interfering with my training big time, but I just kept on going," she said.

In addition to training for the climb, Harriet began fundraising for it as well. She sent a letter out to all of her personal friends and family, and even gave a speech about the climb and what it was about to her co-workers at the Healthways call center in Cary.

Ron Farb (fourth from left, second row) and Harriet (fifth from left, second row) pose for a group photo with their fellow climbers and guides, including Mark Fisher (first row, kneeling second from left), upon their completion of the climb. Several climbers can be seen wearing the lei's they received in celebration. Photo courtesy of the Climb for Cancer Foundation

"I asked for their help, and they ran with it. We did a Mary Kay sale, a Pampered Chef sale, a silent auction, a 50-50 raffle, and we did a cookbook called 'From Raleigh to Mt. Kilimanjaro.' We made well over $2,000 on the cookbook alone," said Harriet.

A portion of the funds came as a surprise. Some of her fellow co-workers decided not to exchange Christmas gifts, and instead donated the money to Harriet's climb. A few of her colleagues' entire families decided to do the same. One colleague's 10-year-old daughter wrote Harriet a note that said, "You're climbing to change the world. I held a garage and bake sale and raised $20 for you." In addition, Healthways matched the donations up to $5,000.

When January came, and it was time to head to Tanzania, Harriet hoped she was ready.

"When you go to the gym and you do a really good workout, an hour and a half or two hours, you get out and you say, 'Wow, I am done. I am going home and take a shower and chill or get on with my day.' But before the climb, I was always wondering 'What is it going to be like to exercise for eight straight hours?' I had no concept of what that was like," she said.

They set out on January 13 and were joined by a small group of nine other climbers, as well as support staff of close to 80 porters who carried seven days' worth of food, the tents, and all of the other gear. At the start of the climb, the group endured several days of rain. Unsurprisingly, this did little to deter Harriet.

"It did make the situation less than optimal. It made the rocks very slippery and the mud very thick, but we had the proper gear and I didn't mind it," she said.

On the route, the climbers passed through several ecosystems ranging from dense rainforest, to desert-like plains, to volcanic rock- and snow-covered slopes.

Ron said, "It's devoid of vegetation when you get up to the higher altitudes and it's just rock. That can get demoralizing ... as you are taking two steps forward and sliding one step back on the loose rock."

On the night they were to head to Kilimanjaro's summit, Harriet and the rest of the Climb for

When Harriet Farb (above) visited the UNC Lineberger Comprehensive Cancer Center after returning from Tanzania, she brought with her the colorful tapestry presented to her by Alpine Ascents International in congratulations for her achievement on Kilimanjaro. Photo by Dianne Shaw

Cancer team were at 16,000 feet, having climbed approximately 10,000 feet over the previous five days. The summit stood 3,340 feet above them.

When mountain guide Mark Fisher trudged against the ferocious winds to Ron Farb's tent on summit night, they decided to tell the climbers to get ready to give the summit a try.

"Mark came to my tent and said 'Harriett, I'm 99.9 percent sure you're going to make the summit. You have been so strong this whole climb.' But I had no idea what the weather was like outside. And when I stepped outside of my tent I was like 'Whoa!' It was snowing and the wind was whipping us," said Harriet.

The group began their final ascent to the summit, but progress was slow. The climbing technique that Harriet had learned, called "Rest-Step," which involves the active awareness of one's balance, cadence, and traction during each and every step, wasn't working against the unrelenting wind.

Says Ron, "The African guide we had, he's been on the summit of Kilimanjaro over 300 times. He said he had never seen the kind of weather we had on the mountain that night."

Harriet said, "I couldn't keep my footing because the wind was trying to knock me over. There was nowhere to sink your climbing poles because it was all rock. When I would bring one foot off the ground, that's when the wind would catch me. I found myself taking little baby steps so I didn't have to [fight the wind]."

They struggled up the mountain for two hours, traversing another 1,500 feet, before it became clear that conditions were too harsh for the entire party to make it to the summit that night.

"Mark came to us and said 'Look, we're all going to go back. This is pretty dangerous.' I did not want to go back because I was afraid to turn around and look at where I had come from. I remembered what I had just done, and thinking of doing that in reverse, at night, was pretty scary," said Harriet.

Harriet initially rejected the suggestion of turning around and required some convincing from her brother. She didn't want to stop short of her goal, nor did she want to descend from where she had just come from in the dark of night. She had come to the mountain to reach the top.

"I kept trying to tell her that she had nothing to prove to anyone because she had proved so much already. It's an arduous trip for anybody under normal circumstances. In bad weather, it is a very difficult trip. In bad weather and on chemotherapy? Unimaginable. I was so proud of her. There's no doubt in my mind she would have gotten to the summit if not for the weather. It was horrible," said Ron.

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Supporting women in the sciences

The Working on Women in Science program aims to foster the careers of women through public recognition, leadership training, mentoring and networking

Photo by [illegible] Sears

The number of women in faculty positions in the sciences nationwide lags well behind the proportion of undergraduate and graduate degrees granted to women, according to studies by the National Science Foundation and others. To address this problem, UNC launched a program last year to recruit and support women faculty throughout its sciences and health affairs divisions.

The program, called Working on Women in Science (WOWS), is designed to foster the careers of women in science through public recognition, leadership training, mentoring and networking.

At UNC, women comprise about 60 percent of all undergraduates and 31 percent of tenured and tenure-track faculty, but they make up only about 23 percent of such faculty in the sciences (20 percent in the natural, mathematical and behavioral sciences and 27 percent in medicine).

"This is a national problem and UNC should be part of the solution," said Dr. Etta Pisano, vice dean for academic affairs at UNC's School of Medicine, Kenan professor of radiology and biomedical engineering, and director of the UNC Biomedical Research Imaging Center. "This will attract to our campus more women leaders in the sciences and clinical health, and will provide role

models for future generations."

Studies indicate that women in the US earn half the bachelors degrees awarded in science and engineering and about 37 percent of the doctoral degrees, but they constitute only about 28 percent of science and engineering faculty in four-year colleges and universities. When one examines the percentages of women scientists in higher positions, the figure drops precipitously, with fewer than 15 percent of full professors in the life sciences and single-digit percentages across the physical sciences. Women from minority racial and ethnic backgrounds are even rarer at all levels in the nation's leading science and engineering departments.

Rosalind Coleman

A recent blue-ribbon report from the National Academies examined the status of women in senior academic science and engineering positions across the country. It noted that women are paid less, promoted more slowly, bypassed for honors, and subjected to implicit gender bias from both their male—and female—colleagues.

"It's absolutely critical that we encourage and support women in the sciences across the UNC campus," said UNC-Chapel Hill Chancellor-elect Holden Thorp, PhD, Kenan Professor of Chemistry and dean of the College of Arts and Sciences. "We need more women at the highest levels of scientific research to contribute their knowledge to solving critical problems and to provide role models to encourage more young women to go into the sciences. We should be as ambitious about addressing this challenge as we are in trying to discover scientific solutions to other public problems."

WOWS names first fellows to program

The first fellows in the WOWS program were named this past December. They are Margaret Leigh from the School of Medicine, Rosalind Coleman from the schools of medicine and public health, and Laurie McNeil and Jane Hawkins from the College of Arts and Sciences.

"Many women enter science as students but too few stay in academic careers to assume positions of leadership," Pisano said.

"I am confident that our first WOWS Scholars will make important contributions to our goal—promoting the professional advancement of women in the sciences," said Karen Gil, senior associate dean for social sciences in the College of Arts and Sciences.

Coleman, a professor of nutrition and pediatrics, focuses on the use of biochemical and molecular techniques to study glycerolipid metabolism and the regulation of triacylglycerol and phospholipid synthesis in liver.

Margaret Leigh

Leigh, a professor and vice chair of pediatrics in the School of Medicine, has long been a world leader in the study of airway disorders in children, ranging from cystic fibrosis to primary ciliary dyskinesia. She has and continues to serve in national leadership roles for the Cystic Fibrosis Foundation.

McNeil, professor and chair of the department of physics and astronomy, is a condensed matter/materials physicist, specializing in optical spectroscopy of semiconductors and insulators.

Hawkins, professor of mathematics, works on the mathematical theory of physical or abstract objects that change over time. She is also working on a mathematical model of the spread of HIV in a lymph node.

WOWS grew from an interdisciplinary grant proposal led by McNeil.

"In order to be the best public university in the nation, UNC must draw from the largest talent pool possible in hiring outstanding faculty members and assuring their success," said McNeil. "This

Photo by Dan Sears

requires that we use the best practices in hiring and promotion, provide a climate that fosters professional growth, advance women to positions of leadership, and provide role models for young female scientists. The WOWS program will assist us in all of these."

The project has quickly garnered attention and interest among other insitutions and outside groups. Patricia Byrns, MD, associate dean in the Office of Research and Faculty Development at UNC, gave a presentation titled "Working on Women in Science (WOWS): An Initiative to Recruit, Retain, and Promote Women at UNC" during the National Leadership Workshop on Mentoring Women in Biomedical Careers held in Bethesda, Maryland, last November. Kay Lund, PhD, Sarah Graham Kenan Professor of Cell & Molecular Physiology and Pediatrics in the School of Medicine, recently lectured on the WOWS program during the Nutrition and Women's Health Forum held last month at the Center for Women's Health Research in Chapel Hill.

UNC continues to seek external funding for the initiative, and Pisano has been leading an effort to raise funds from departments and programs across the university. A Working on Women in Science fund has been established at the Medical Foundation of North Carolina, Inc., with $5,000 in gifts received to date.

Funding commitments from UNC's science and health divisions support WOWS initiatives, such as the WOWS Scholars; financial support for temporary instructional and administrative personnel to replace faculty members on leave for family responsibilities; lectures by visiting scholars, dramatic performances and other special events; and women's leadership luncheons and other networking and training opportunities.

The program has been endorsed by UNC's Office of the Provost and all of the schools having female science faculty, including the College of Arts and Sciences and the schools of dentistry, information and library sciences, medicine, nursing, pharmacy and public health.

Student, Faculty, Staff Honored with Women's Advancement Awards

Carolina has honored a student, a professor, and a staff member with the University Awards for the Advancement of Women.

The award recognizes women who have mentored or supported their peers on campus, elevated the status of women or improved campus policies for them, promoted women's recruitment and retention, or promoted professional development for women. It was created following the abolition of the Cornelia Phillips Spencer Bell Award in 2004.

This year's honorees are P. Kay Lund of Carrboro, Sarah Graham Kenan Profess or of Cell and Molecular Physiology in the School of Medicine; Melva "Cookie" Newsom of Cary, director of diversity education and assessment in the Office of Diversity and Multicultural Affairs; and Emily Joy Rothchild of Cedar Rapids, Iowa, a junior music major.

Lund served as president of the UNC Association of Professional Women in Medical Sciences from 2004-2007 and currently is chair of the Working on Women in Science initiative steering committee. Her lobbying has resulted in future career recognition and benefits to professional women in the medical school. She established the seminar series "Celebrating Women in Science and Medicine," which recognizes achievements of women in science. Lund also has trained and mentored many female junior faculty and students, including 14 doctoral students and more than 30 postdoctoral students, clinical fellows, and undergraduates.

Newsom is chair of the Black Faculty and Staff Caucus, which includes a mentoring program for black women, and was instrumental in the development of the University's first diversity plan. She mentors other women as a member of the board of advisors for the Leadership Institute and Leadership Academy and through her "Sister Lunch," a networking and mentoring activity for women of color on the UNC campus that she established. She serves on the Orange County Rape Crisis Center's board of directors and is a co-planner of the annual Summer Public Health Research Institute and Videoconference on Minority Health.

Rothchild is co-chair of the Women's Affairs Committee of the executive branch of student government and serves as a student representative for both the Carolina Women's Center program advisory council and the Provost's Committee on Gender Equity. She was instrumental to the passage of the safety and security fee increase and worked with Campus Health Services to revise its Web site to offer more pregnancy-related options for women.

Winners of the University Award for the Advancement of Women pose March 24 with Chancellor James Moeser. They are, from left, Kay Lund, Melva "Cookie" Newsom and Emily Rothchild. Photo by Dan Sears

The recipients each receive a monetary award. The Carolina Women's Center received 58 nominations for this year's awards, more than double the number received last year.

Too much or too little weight gain poses risks to pregnant mothers, babies

Women who gain more or less than recommended amounts of weight during pregnancy are likely to increase the risk of problems for both themselves and their child, according to a new report by the RTI International-University of North Carolina at Chapel Hill Evidence-based Practice Center.

The report, which was supported by the US Department of Health and Human Services' Agency for Healthcare Research and Quality (AHRQ) in partnership with the American Dietetic Association, is based on a systematic review of 150 studies that assessed the short- and long-term effects of maternal weight gain on pregnancy, mothers, fetuses, and children.

Among the report's key findings is a strong association between high maternal weight gain and increased fetal growth and infant birth weight, which can contribute to complications during labor if a baby is too big, and can lead to long term health effects for the child. High maternal weight gain also is associated with cesarean delivery and weight retention by mothers after childbirth.

The review also confirmed that gaining too little weight during pregnancy can be a problem. Low maternal weight gain is associated with poor fetal growth, lower birth weight, and the chance of a baby being born prematurely.

Along with Viswanathan and Siega-Riz, the other authors of the report are Merry-K Moos, a research professor in the obstetrics and gynecology department in the UNC School of Medicine, and an adjunct professor in the schools of Nursing and Public Health; Andrea Deierlein, a research assistant and doctoral student in the nutrition department in the School of Public Health; Sunni Mumford, a doctoral student in the epidemiology department in the School of Public Health; Julie Knaack, program assistant in the maternal and child health department in the School of Public Health; Patricia Thieda, project coordinator at UNC's Cecil G. Sheps Center for Health Services Research; and Linda J. Lux and Kathleen N. Lohr, PhD, from RTI International.

The report can be found on AHRQ's Web site at: http://www.ahrq.gov/clinic/tp/admattp.htm.

Gene variants may predict treatment response to antipsychotic medications

A genetic analysis has found that variants of a particular gene might be able to predict how some schizophrenia patients will respond to antipsychotic medications, but the predictive power differs between people of self-reported African and European ancestry.

"We know that response to antipsychotic medicines varies substantially. These analyses help to explain why and will help us pursue the important goal of individualized treatment," said Dr. Scott Stroup, a co-author of the study and professor of psychiatry at the University of North Carolina at Chapel Hill School of Medicine. Dr. Patrick Sullivan, a UNC professor of genetics, and Tara Skelly, a UNC laboratory technician, are also study co-authors. Dr. Daniel B. Campbell of Vanderbilt University is lead author.

The study, published in the January 1, 2008 issue of the journal *Biological Psychiatry*, is based on an analysis of data and DNA samples collected from 678 patients who participated in an earlier, UNC-led study, Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE). The researchers in the newer study found that variants of the gene encoding for the regulator of G-protein signaling 4, called RGS4, may predict how people with specific disease phenotypes would respond to widely used antipsychotic medications. RGS4 is a protein that regulates the functional consequences of activating neurotransmitter receptors.

Dr. Scott Stroup

Of the 678 patients, 198 (29 percent) reported their ancestry as being from "Africa only" while 397 (59 percent) reported "Europe only" ancestry and 83 (12 percent) reported "other" ancestry. By applying genetic analysis methods to the data from these patients, the researchers found several treatment responses in the African ancestry group that were not seen in the European ancestry group. For example, patients of African ancestry with a particular RGS4 variant continued on the drug perphenazine significantly longer than those on quetiapine or ziprasidone. These different responses were not found in the European ancestry group.

Protein controls vessel formation, offers new drug target

After an injury, the body grows new blood vessels to repair damaged tissue. But sometimes too much growth causes problems, as when new blood vessels in the eyes leak, causing diabetic retinopathy and blindness if not treated.

A protein called CIB1, discovered by researchers at the UNC School of Medicine, appears to play a major role in controlling new blood vessel growth, offering a target for drug treatments to help the body repair itself after injury and control unwanted blood vessel growth.

"In the future, this knowledge may help our ability to control blood vessel growth in disease situations such as wound healing, retinal diseases and diabetes," said Leslie Parise, PhD, senior study author and professor and chair of biochemistry and biophysics in UNC's School of Medicine.

The results appeared in the journal *Circulation Research* and were published online in December. The research was funded by the National Institutes of Health.

Parise's lab first discovered the protein in blood platelets in 1997. CIB1 keeps blood platelets from sticking together, acting as a natural anti-coagulant to prevent clots that might lead to heart attacks or strokes. But further research showed the protein appears in almost every cell type in the body, Parise said. For example, male mice bred without both copies of the CIB1 gene are infertile.

In the current study, Parise and her colleagues found CIB1 in the endothelial cells that line all blood vessels. These cells jump-start new blood vessel growth by a process called angiogenesis. During angiogenesis, biological signals prompt endothelial cells to release enzymes and other chemicals that allow them to move away from existing blood vessels and form new ones.

In experiments in mice missing CIB1 genes, the researchers found that the protein is critical for angiogenesis in the retina and in hind legs. In both cases, the new blood vessel growth was prompted by ischemia, or restricted blood flow. However, clinicians treating retinal disease need to restrict blood vessel growth in the eyes, while patients with restricted blood flow in their limbs need to grow blood vessels. Therefore, CIB1 could be a target for both pro- and anti-angiogenic drug therapies.

Study co-authors with Parise and Zayad include Weiping Yuan, Tina M. Leisner, Dan Chalothorn, Andrew W. McFadden, Michael D. Schaller, M. Elizabeth Hartnett and James E. Faber, all of UNC.

Hormone may be new drug target for preventing lymphedema, tumor spread

A hormone secreted by cells throughout the body and known to play a role in cardiovascular disease and other cell functions is also critical for proper formation of the lymphatic system in mice, according to research from the UNC School of Medicine.

By targeting this hormone, called adrenomedullin, researchers may be able to treat the more than 100 million people worldwide affected by lymphedema, a condition that causes painful swelling in arms and legs.

"Our research also may lead to therapies to prevent cancer cells from traveling through these lymphatic vessels to infiltrate other parts of the body," said Kathleen M. Caron, PhD, senior study author and assistant professor of cell and molecular physiology and genetics at UNC.

Dr. Kathleen Caron

Adrenomedullin is a powerful vascular peptide that can widen existing blood vessels and even promote the growth of new ones. But it also has many more functions, such as helping control metabolism, heart rate, thirst and appetite, stress response, antibacterial activity and nerve signal transmission.

The study was published in the December 20, 2007, issue of the *Journal of Clinical Investigation*. The research was funded in part by The Burroughs Wellcome Fund, the National Institutes of Health and the American Heart Association. Study co-authors are Kimberly L. Fritz-Six, William P. Dunworth and Manyu Li, all of the UNC School of Medicine.

New studies suggest brain overgrowth in one-year-olds linked to development of autism

Brain overgrowth in the latter part of an infant's first year may contribute to the onset of autistic characteristics, according to research presented last December at the American College of Neuropsychopharmacology (ACNP) annual meeting in Boca Raton, Fla. These findings support concurrent research which has found brain overgrowth in autistic children as young as two years old.

Lead researcher Joseph Piven, MD, director of the Neurodevelopmental Disorders Research Center at Carolina and an ACNP member, says that behavioral studies of infants at high risk for autism suggest that the onset of most behavioral symptoms which define the disorder, such as problems with and social interaction, also occur at about age one. "One reason these findings are important is because early post-natal onset raises the possibility that there may be a window for early treatment and prevention that could be identified by future studies," Piven says.

Piven cautions that while the study seems to suggest a link between brain overgrowth and autism, there are many variants of autism among children, so the ways in which autistic children develop and are affected by brain growth can vary greatly.

Piven says he will continue to study brain development in autism through a study which is part of the new Autism Centers of Excellence funded by the National Institutes of Health. This study will examine more than 500 infant siblings of autistic individuals with magnetic resonance imaging at UNC, Children's Hospital of Philadelphia, Washington University of St. Louis and the University of Washington in Seattle.

UNC, Duke lead first statewide shaken baby prevention research project in U.S.

Child abuse prevention experts from the UNC Injury Prevention Research Center and School of Medicine and Duke University Medical Center will undertake a $7 million statewide shaken baby prevention project.

The project, the largest and most comprehensive in the country, is funded by the Centers for Disease Control and Prevention, the Doris Duke Charitable Foundation and The Duke Endowment and is led by a broad coalition of stakeholders from the National Center for Shaken Baby Syndrome, University of British Columbia and state and county agencies, service providers and non-profit organizations.

The project is designed to reach the parents of every baby born each year in North Carolina with the goal of significantly reducing the number of deaths and serious injuries that occur when frustrated caregivers shake crying babies.

"In a baseline survey of parents of children younger than two years old in North Carolina, we found that more than 2,000 of these children are shaken, to a greater or lesser extent, by a caregiver each year and that serious injuries result for some," said Dr. Desmond Runyan, a professor

of social medicine and pediatrics at UNC and principal investigator for the project.

"However, only about 40 of these children are admitted to a hospital intensive care unit. Of those, 10 die and the other 27 suffer serious long-term health problems such as mental retardation, blindness, or cerebral palsy as a result," Runyan said. "A lot more children are shaken who are not hospitalized but may have mental retardation or learning disabilities later. This shows the need for, and potential benefits of, preventing shaking."

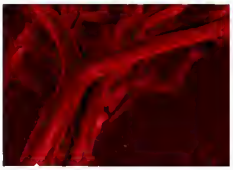
North Carolina's project plans to provide every parent of the approximately 125,000 babies born in the state annually with an intervention program called "The Period of PURPLE Crying," which was developed by Dr. Ron Barr, a professor of community child health research and a developmental pediatrician at the University of British Columbia, and Marilyn Barr, founder and executive director of the National Center on Shaken Baby Syndrome. Both Dr. Barr and Marilyn Barr are collaborating with the North Carolina project.

Researchers identify new cell targets for preventing growth of breast and other tumors

Researchers at the Lineberger Comprehensive Cancer Center at UNC have discovered new targets for cancer treatment aimed at blocking a key step in tumor progression.

This step—the creation of new blood vessels—enables tumors to grow out of control and ultimately spread cancer to other parts of the body.

Targeting blood vessel formation, or angiogenesis, promises to be less toxic than the standard chemotherapy approach that kills cancer cells and normal cells alike. The new tactic has been shown by others to be successful in the treatment of breast cancer and colon cancer with the drug bevacizumab (commercially known as Avastin), which inhibits an important player in angiogenesis, a protein called vascular endothelial growth factor (VEGF).



"There is a large amount of data that shows if you block angiogenesis, you can block tumor growth," said Dr. Nancy Klauber-DeMore, associate professor of surgery in the UNC School of Medicine and senior author on the study. "But VEGF is not responsible for all of angiogenesis. We wanted to identify more targets for this therapeutic approach.

"The most exciting aspect of this study is that we now have a very large list of potential targets that we will continue to work on for at least the next decade," Klauber-DeMore said.

A report of the study appeared online in April in the *American Journal of Pathology*. It was published in print edition in May. The study can be found at: http://ajp.amjpathol.org.

Survey finds disordered eating behaviors among three out of four American women

Sixty-five percent of American women between the ages of 25 and 45 report having disordered eating behaviors, according to the results of a new survey by *SELF* magazine in partnership with UNC.

An additional 10 percent of women report symptoms consistent with eating disorders such as anorexia, bulimia nervosa and binge eating disorder, meaning that a total of 75 percent of all American women endorse some unhealthy thoughts, feelings or behaviors related to food or their bodies.

"Our survey found that these behaviors cut across racial and ethnic lines and are not limited to any one group," said Cynthia M. Bulik, PhD, William and Jeanne Jordan Distinguished Professor of Eating Disorders in the UNC School of Medicine's Department of Psychiatry and director of the UNC Eating Disorders Program. "Women who identified their ethnic backgrounds as Hispanic or Latina, white, black or African American and Asian were all represented among the women who reported unhealthy eating behaviors.

"What we found most surprising was the unexpectedly high number of women who engage in unhealthy purging activities," said Bulik, who is also a nutrition professor in the School of Public Health. "More than 31 percent of women in the survey reported that in an attempt to lose weight they had induced vomiting or had taken laxatives, diuretics or diet pills at some point in their life. Among these women, more than 50 percent engaged in purging activities at least a few times a week and many did so every day."

The online survey garnered responses from 4,023 women who answered detailed questions about their eating habits. Results and analysis appeared in *SELF's* May issue.

UNC study, a first, treats OCD patients and their partners

Most people occasionally worry about germs, strange noises in the night, or whether they forgot to turn off the oven before leaving on vacation. But for as many as 5 million Americans with obsessive-compulsive disorder (OCD), such anxieties are constant—and can almost literally take over their lives.

Now two expert clinical psychologists at UNC will, for the first time, use cognitive-behavioral therapy (CBT) to treat couples in which one partner has OCD. The therapy has been effective in treating individuals who have OCD, and in treating couples where one partner suffers from another health problem. This is the first time the therapy will be used in couples involving a partner with OCD.

Jonathan Abramowitz, PhD, associate professor and associate chair of the psychology department in UNC's College of Arts and Sciences, who is also director of UNC's Anxiety Disorders Clinic, and Donald Baucom, PhD, professor of psychology and director of UNC's Couples Therapy Clinic,

will provide treatment for about 20 couples as part of a new study funded by the Obsessive Compulsive Foundation. Abramowitz is also a research associate professor and Baucom is a research professor in the UNC School of Medicine's psychiatry department.

"This therapy involves helping patients learn strategies to reduce their obsessional fears and compulsive behaviors," he said. Over time, many patients learn that they do not need to perform these rituals to stay safe.

In the UNC study, trained therapists under the supervision of Abramowitz and Baucom will work with both partners in each couple.

Study participants will be given "homework" between sessions. They will receive specific help with the OCD symptoms as well as counseling to enhance their overall relationship.

"The hope is that when both partners learn the CBT techniques, the partner without the disorder can be more helpful in encouraging the OCD mate to work through fears realistically," Abramowitz said. "This would be good for the OCD sufferers and their spouses."

Most lethal melanomas are on scalp and neck

People with scalp or neck melanomas die at nearly twice the rate of people with melanoma elsewhere on the body, including the face or ears, researchers at UNC have found.

The analysis of 51,704 melanoma cases in the US confirms that survival rates differ depending on where skin cancer first appears. Those with scalp or neck melanomas die at a rate 1.84 times higher than those with melanomas on the extremities, after controlling for the possible influences of age, gender, tumor thickness and ulceration.

"Scalp and neck melanomas patients have a higher rate of death than patients with melanoma anywhere else on the body," said Nancy Thomas, MD, PhD, associate professor of dermatology in the UNC School of Medicine, a member of the UNC Lineberger Comprehensive Cancer Center and the study's senior author. Anne Lachiewicz, a medical student in the UNC School of Medicine, is the lead author of the study.

Thomas recommends that physicians pay special attention to the scalp when examining patients for signs of skin cancer. "Only six percent of melanoma patients present with the disease on the scalp or neck, but those patients account for 10 percent of melanoma deaths. That's why we need to take extra time to look at the scalp during full-skin examinations," she said.

The results appeared in the April issue of the journal *Archives of Dermatology*

Study co-authors are Drs. Marianne Berwick and Charles Wiggins of the University of New Mexico. Funding was provided by the National Cancer Institute and a Holderness Medical Foundation Fellowship to Lachiewicz

Discovery of "overdrive" protein could broaden drug design options

New research by scientists at UNC shows for the first time that an important family of proteins known to function at the cell surface also functions at a site within the cell.

The findings have potential implications for drug development as they involve G protein-coupled receptors (GPCRs). These molecules are the target of 40 to 50 percent of modern medicinal drugs, such as antihistamines and drugs for high blood pressure.

The study identified the first protein to activate the G-protein signaling pathway from within a cell. In humans, reactions to everything from taste and smell to stimulants like adrenaline or caffeine requires G-protein signaling.

More than half of all drugs, from asthma and heart medicine to antidepressants, target G-protein receptors. Discovering a protein that activates G-proteins from inside a cell could open up an entirely new pathway for drug development, said Henrik Dohlman, PhD, senior study author and a professor of biochemistry and biophysics in UNC's School of Medicine.

"No drug is 100-percent effective, 100-percent free of side effects and 100-percent safe. The more options we have biochemically, the more selective we can be in designing new drugs. If we can find another way of modulating G-proteins, we could expand the drug targets that are available to pharmacology," Dohlman said.

The study appeared in the February online and print editions of the journal *Current Biology*. Funding was provided by the National Institutes of Health and a UNC Cell and Molecular Biology Program predoctoral fellowship.

Discovery of differences in heart's precursor cells may advance treatment options

Scientists have long thought that the cells that ultimately give rise to the heart all respond to the same cue before turning into the muscle tissue of this vital organ. But now researchers at UNC's School of Medicine have shown that not all heart cells are created equal; in response to one signal to differentiate, some will act, while others lie in wait.

The discovery, made in frogs, or Xenopus, may lead to advances in understanding—and ultimately treating—congenital heart disease and heart attacks.

"This is profoundly important work," said Cam Patterson, MD, professor of medicine, chair of cardiology and director of the Carolina Cardiovascular Biology Center. "Not only does it tell us about how stem cells differentiate to create the heart, but it provides us with knowledge that may very well help us to repair heart muscle after a heart attack."

Frank Conlon, PhD, assistant professor of genetics in the UNC School of Medicine, is senior author of the study. The lead author was Kathleen S. Christine, a graduate student in Conlon's laboratory at UNC. The study appeared in the online and print editions of *Developmental Cell* in April. The research was funded by the NIH.

Cohen receives Board of Governors' highest honor

Dr. Myron S. Cohen, associate vice chancellor for global health and director of the Institute of Global Health and Infectious Diseases at UNC-Chapel Hill, received the O. Max Gardner Award last month from the Board of Governors of the multi-campus University of North Carolina. Recognized as one of the world's leading authorities on the transmission and prevention of HIV/AIDS and other sexually transmitted diseases, Cohen was honored for his international leadership in advancing HIV research, treatment, and prevention in countries around the globe.

Dr. Myron S. Cohen *Photo by Dan Sears*

The awards, given annually since 1949, were established by the will of Gov. Oliver Max Gardner to recognize faculty who have "made the greatest contributions to the welfare of the human race." It is the only award for which all faculty members of the 17 UNC campuses are eligible. Recipients are nominated by their chancellors and selected by the Board of Governors. The 2008 award carries a $20,000 cash prize and was presented by Board of Governors Chairman Jim Phillips and Gardner Award Committee Chairman Dudley Flood of Raleigh.

A UNC-Chapel Hill faculty member for the past 27 years, Cohen is the J. Herbert Bate Distinguished Professor of Medicine, Microbiology and Public Health and has served as director of the medical school's Division of Infectious Diseases since 1989. After earning an undergraduate degree from the University of Illinois and his MD degree from Rush Medical College in Chicago, he completed a residency in internal medicine at the University of Michigan and a fellowship in infectious diseases at Yale University. Cohen joined the UNC-Chapel Hill faculty in 1980—the very year that AIDS was first identified—and has spent more than two decades building a multidisciplinary team of researchers devoted to studying the transmission and prevention of the virus responsible for this devastating disease. He was one of the first to recognize that any attempt to stem the AIDS epidemic would require an international program targeting improved care, treatment, and research in developing countries. He and his colleagues have built and sustained research and medical training projects in resource-poor countries such as Malawi, China, the Democratic Republic of Congo, South Africa, and Russia, as well as the United States.

Cohen's team of researchers at Carolina developed sensitive assays to measure the concentration of the HIV virus in bodily fluids and was among the first to demonstrate that the presence of other sexually transmitted diseases can increase the likelihood of HIV transmission. Their research provided the scientific foundation for the Center for Disease Control's 2005 strategic plan for HIV prevention and led the National Institutes of Health to tap UNC-Chapel Hill to help develop a safe and effective vaccine against HIV/AIDS.

UNC Board of Governors endorses plan to expand medical education in North Carolina

In an effort to address an expected shortage of doctors in North Carolina, the UNC Board of Governors in March gave its endorsement to a plan to expand medical education at the state's public medical schools.

The plan is based on a collaborative effort between the UNC School of Medicine and the Brody School of Medicine at East Carolina University. In addition, UNC will develop facilities in Charlotte and Asheville to accommodate students in the last two years of their medical education. UNC's expansion in Charlotte will involve a partnership with Carolinas Medical Center (CMC), as well as collaboration with the University of North Carolina at Charlotte in expanding research and related initiatives. The expansion in Asheville will involve Mission Hospital, the Mountain Area Health Education Center, and the Western North Carolina Health Network. ECU's Brody School of Medicine will work with AHEC to expand opportunities for its students to spend much of their third and fourth years in clinical placement in underserved areas.

This is a complex plan that will require more planning activities as each component is developed. The Board of Governors also will consider future requests for funding from the General Assembly. The cumulative cost of the plan is expected to be in the vicinity of $450 million—the bulk of which would provide new and/or renovated facilities—and would be phased in over the next 10 years.

"This is a milestone for our medical schools, as well as the people of North Carolina," said UNC President Erskine Bowles. "We have recognized for some time the threat of a physician shortage in our state. This coordinated plan for expansion positions us to better fulfill our mission to serve the medical needs of North Carolinians. I also applaud the leadership shown by our chancellors and the way our campuses have worked together to develop this joint plan."

The Joint Plan for Medical Education in North Carolina calls for: UNC-Chapel Hill will expand its medical school

enrollment from 160 to 230 first-year students on a phased basis, starting in 2009; Brody will expand its first-year medical school enrollment from the current 73 to 120 students in a phased process—the timeline for increasing enrollment will be determined by fall 2008; UNC's additional 70 students will complete their third- and fourth-year rotations at either the CMC Charlotte campus (50) or Asheville campus (20), starting their regional placements in 2011; Brody's additional students will complete their third- and fourth-year clinical education at satellite training centers located in eastern North Carolina—those sites will be identified by early 2009.

The plan also calls for a task force representing both public and private medical schools in the state, as well as the Carolinas Medical Center, AHEC, and the Sheps Center at UNC, to develop a plan for expanding the number of residencies or slots for graduate medical education in North Carolina and to seek more federal funding to support these residencies. Where a physician eventually decides to practice is highly correlated with where he or she completed a medical residency.

The North Carolina Institute of Medicine, the National Institute of Medicine and the Association of American Medical Colleges all predict a deficit of physicians by 2020, particularly in primary care. Already, fewer physicians are electing to go into primary care, and there are growing problems arising from imbalances in the geographic distribution of physicians. The predicted shortage is of particular concern in North Carolina, where the population is expected to grow 52 percent by 2030.

Taft inducted to Order of the Golden Fleece

Timothy Taft, MD, Max M. Novich professor of sports medicine, and professor of orthopaedics in the School of Medicine, has been inducted into the Order of the Golden Fleece. The award is considered the highest honorary at the University of North Carolina at Chapel Hill.

Taft, also the director of sports medicine and an adjunct professor of physical education, was instrumental in bringing the Special Olympics to North Carolina; and for 35 years has been a tireless and dedicated team doctor for UNC varsity sports. Taft's commitment to Carolina and to serving undergraduates has included years of teaching and work with injured students on a daily basis.

Dr. Timothy Taft

The Order of the Golden Fleece was founded in 1903 to unite student leaders in the resolution of student problems for the betterment of campus life. The Golden Fleece selects its members based upon service to the university as reflected in scholarship, motivation, creativity, loyalty, and leadership in academic and extracurricular pursuits.

Dr. Ana Benitez-Graham, (center), a dermatology resident, and first-year UNC medical student Daniel Schneider evaluate a patient's skin rash at the Student Health Action Coalition (SHAC) clinic last April. SHAC, the oldest functioning free student-run clinic in the nation, celebrated its 40th anniversary this year. Photo by Hannah Sharpe, Daily Tar Heel

SHAC celebrates 40 years of service

A Carrboro-based health clinic run by University of North Carolina at Chapel Hill students—the oldest such operation in the United States—recognized its 40 years of service with an anniversary celebration held at the Carrboro Arts Center last April.

Every Wednesday night, students from the UNC schools of medicine, nursing, pharmacy, physical therapy, public health and social work, along with volunteer physicians from the medical school's Department of Family Medicine, transform the Carrboro Community Health Center into the free Student Health Action Coalition (SHAC) clinic.

Over the years, scores of families, migrant workers and college students have attended the free clinic, receiving services ranging from reproductive health screenings to physical therapy. In the past year alone, SHAC volunteers provided care to more than 1,000 patients.

Founded by a group of UNC medical students looking to better understand and improve the health of the community, the first SHAC clinic opened in 1968. Since then, thousands of student volunteers from UNC allied health schools have continued to pursue a threefold mission of providing free medical services, engaging with communities and creating an interdisciplinary learning environment.

Student leaders have continued to expand the organization's reach beyond the clinic's walls, such as through a mobile service that provides medical needs assessments, social support and companionship to homebound seniors, and a new Native Health Initiative, which partners with indigenous communities throughout North Carolina on health interventions, advocacy and research. Volunteers from the UNC School of Dentistry also provide oral health services at Dental SHAC, the oldest student-run dental clinic in the state and among the oldest in the nation.

While the organization currently relies on various funding sources and university and community partnerships to provide its services, efforts are underway to build an endowment fund of $750,000, which would provide steady annual funding to ensure SHAC's future. The endowment fund campaign is half way towards reaching that goal. For more information about SHAC, visit its Web site at www.med.unc.edu/shac.

Earp receives UNC's Thomas Jefferson Award

Dr. H. Shelton Earp, professor of pharmacology and medicine, Lineberger Professor of Cancer Research and director of the UNC Lineberger Comprehensive Cancer Center at UNC, has been honored by his peers with the 2008 Thomas Jefferson Award.

Dr. H. Shelton Earp

The annual Thomas Jefferson Award recognizes a UNC faculty member who, through personal influence and performance of duty in teaching, writing and scholarship, has best exemplified the ideals and objectives of Thomas Jefferson. UNC faculty members nominate candidates for the honor, which carries a cash prize; a faculty committee chooses the recipient.

A faculty member since 1977, Earp earned his medical degree from Carolina in 1970 and has devoted more than three decades to researching the behavior of cancer cells and the signals that regulate cell growth and differentiation.

The author of 125 peer-reviewed publications, Earp is board-certified in internal medicine and endocrinology. He is the past president of the Association of American Cancer Institutes and has served on its board of directors since 2001. He is also a member of the American Association for Cancer Research, the Association of American Physicians and the American societies of clinical oncology, hematology, cell biology, microbiology and clinical investigation.

UNC Health Care is first in the Triangle to offer new system for stopping strokes

UNC Health Care has a new tool for stopping a stroke that is already underway, by removing a blood clot in the brain blood vessel that caused the stroke to begin.

The new tool is called the Penumbra System, which uses a tiny catheter threaded inside the brain's blood vessels to suction out the clot and restore healthy blood flow. The US Food and Drug Administration approved the system for general use in December 2007, and UNC Health Care began offering treatment with it in March 2008.

"The Penumbra System gives us a powerful new tool to save more lives and save more people from suffering long-term brain damage and disability as a result of stroke," said Dr. Souvik Sen, director of the UNC Stroke Center. "This treatment requires careful selection of patients and a team of stroke experts, which we have at UNC. In addition, the Penumbra System can be used up to eight hours after symptom onset, extending the window of opportunity in which acute stroke can be treated."

Dr. Sten Solander, a neurointerventional surgeon at UNC, said that the addition of the Penumbra System at UNC Health Care gives him a new catheter-based technique he can use for treating the type of stroke caused by lack of blood supply to the brain.

"For several years now we've been using the clot-busting drug tPA to treat strokes arising from a clot blocking a brain blood vessel," Solander said. "We've also been using a device called the MERCI retriever to remove blood clots from the brains of stroke patients. The Penumbra device gives us access to even smaller vessels in the brain to remove the clot. [With] Penumbra, we are able to successfully treat stroke patients that could not be helped by the MERCI retriever or tPA."

American College of Surgeons establishes new Health Policy Institute at UNC

The American College of Surgeons (ACS) has established a new Health Policy Institute, which will be based initially at UNC-Chapel Hill.

Dr. George F. Sheldon, Zack D. Owens distinguished professor of surgery in UNC's School of Medicine and a former president of the ACS, was selected through a national search to be director of the institute. Thomas J. Ricketts, PhD, deputy director of UNC's Cecil G. Sheps Center for Health Policy Research, has been selected as administrative director.

"I am very excited about this collaboration between the American College of Surgeons and UNC," said Dr. Thomas R. Russell, executive director of the ACS. "Both George Sheldon and Tom Ricketts are nationally respected authorities, and the Sheps Center has a long and distinguished record in conducting health policy research. Basing the ACS Health Policy Institute at UNC will enable the ACS to begin our research much more quickly than if we built an entirely new program from scratch," he added.

In addition, the ACS Health Policy Institute has received requests for collaborative projects from other highly respected research institutes, including the Institute for Health Policy Change and the American Association of Medical Colleges (AAMC) Workforce Center.

The new institute will be headquartered in the Sheps Center until a new building to house the College's Washington, DC, staff is completed, in 2010. At that time the institute's headquarters will relocate to Washington, but much of its work will remain based at UNC, according to Russell.

UNC Hospitals helps pioneer new imaging device for liver, gallbladder, bile duct problems

Until recently, equipment and technology that allowed gastroenterologists to obtain direct images from inside a person's bile or pancreatic ducts was very cumbersome and never became widely available. This made the diagnosis and treatment of patients with certain liver, pancreas, and bile duct problems—such as strictures, large stones and cancer—more difficult. Now UNC Hospitals has joined a small number

of hospitals nationwide that is using a new imaging device that provides direct images from inside the ducts as well as access to obtain tissue biopsies.

The device, known as the SpyGlass Direct Visualization System, includes a miniature 6,000-pixel fiber optic probe that provides physicians with a direct view of a patient's ducts, overcoming some of the visual challenges of conventional procedures. The SpyGlass system also includes a one-millimeter forceps that can be used to take tissue samples for biopsies. It can be used in conjunction with an electrohydraulic lithotripsy device, which uses sound waves to break up stones.

SpyGlass, developed by Boston Scientific Corporation, provides direct visual access into a patient's biliary duct to improve diagnosis by helping to identify stones and strictures (obstructions). A fiber optic probe attaches to a camera head and is inserted through a single-use catheter that can be steered in four directions. This is designed to allow the user to access and inspect all four quadrants of the examination and treatment area. As a result, physicians are able to achieve an improved diagnosis for patients.

"I have just started to use the Spyglass system to perform cholangioscopy and feel it will be very useful in examing patients with strictures, to help determine whether these strictures are benign or malignant. It will also be useful in patients with large bile duct stones. In these patients the SpyGlass system, used in conjunction with electrohydraulic lithotripsy, can fragment the stones into easily removable pieces," said Dr. Lisa Gangarosa, a gastroenterologist and associate professor in UNC's School of Medicine.

Jordan named head of Thurston Arthritis Research Center

Joanne M. Jordan, MD, MPH, associate professor of medicine and orthopaedics, and chief of the Division of Rheumatology, Allergy, and Immunology, was named director of UNC's Thurston Arthritis Research Center in October 2007. Jordan had served as the center's acting director since July 2006.

Jordan (AB, Cornell University; MD, The Johns Hopkins Medical Institutions; MPH, UNC School of Public Health) received her training in internal medicine and sub-specialty training in rheumatology and immunology at Duke University Medical Center. She joined the faculty of the Division of Rheumatology, Allergy, and Immunology at UNC in 1987. She has directed the Multidisciplinary Clinical Research Center since 2003 and the institutional Training Grant in Arthritis and Immunology since 2002.

Dr. Joanne Jordan

Her clinical interests are in osteoarthritis and the arthropathy of hemochromatosis. Her research interests are in the epidemiology and genetics of osteoarthritis and in genetic interaction with environmental triggers of arthritis and autoimmune diseases, particularly metal exposures. Dr. Jordan also directs the Genetics of Osteoarthritis study, a large genetic association study, and is one of the lead investigators in the Genetics of Generalized Osteoarthritis study, the largest family study of osteoarthritis in the world. She has served as consultant and collaborator to numerous research groups worldwide and is the author of over 75 journal articles and four book chapters.

Dept. of Anesthesiology participates in Rotaplast missions

Robert D. Valley, MD, professor of anesthesiology and pediatrics, and Peggy P. Dietrich, MD, pediatric fellow, both in UNC's School of Medicine, participated in a Rotaplast International mission to Can Tho, Vietnam, March 13–25. The mission was to provide anesthesia for lip and palate surgeries to correct cleft lip and palate anomalies. Approximately 75 surgeries were performed during the mission.

Staff from the Department of Anesthesiology has participated in Rotaplast missions for the past 10 years. This was Valley's fifth mission (three to Venezuela, one to Peru), and the second mission for Dietrich (Guatemala). Other UNC anesthesiology faculty who have participated in Rotaplast missions include Dr. Ann Bailey, Dr. Linda Georges, Dr. Sunil Dogra, and Dr. Elizabeth Mann.

Rotaplast missions vary in size with teams ranging from 15 to 35 members, with a typical mission lasting two weeks. Medical teams include reconstructive surgeons with special training in cleft care, pediatricians, nurses, pediatric anesthesiologists, dentists, orthodontists, and speech pathologists. Many teams also include geneticists focusing on researching causes of clefts. These highly skilled professionals work closely with local hospital staff and doctors sharing techniques and working side-by-side to augment and increase care and capacity for treatment. Non-medical volunteers, who pay for their own transportation, perform needed tasks such as instrument sterilization, translation, recovery room monitoring, and the comforting of patients' families.

Rotaplast International is a non-profit humanitarian organization providing free constructive cleft-palate operations and treatment for children in need worldwide, seeking to provide long-term solutions by funding and coordinating surgical missions in developing countries; training and mentoring local physicians; launching public education projects; and advancing research.

Leone appointed to NCSD board of directors

Dr. Peter A. Leone, an expert on sexually transmitted diseases and an associate professor in the UNC schools of medicine and public health, has been appointed to the board of directors of the National Coalition of STD Directors (NCSD).

The coalition is a partnership of public health professionals dedicated to the prevention of sexually

transmitted diseases (STDs). Based in Washington, DC, the NCSD advocates for effective policies, strategies, and sufficient resources for STD programs and works to increase awareness of their medical and social impact.

As a member of the board, Leone will serve a two-year term and will be involved in setting directions for the organization, drafting new guidelines and serving in an advisory capacity at the national level for STD policy. He is also medical director of the HIV/STD Prevention and Care Branch of the North Carolina Department of Health and Human Services.

UNC neurology professor appointed to national credentialing body

Dr. James F. Howard Jr., distinguished professor of neuromuscular disease in the UNC School of Medicine's neurology department, has been appointed to the Board of Directors of the American Board of Electrodiagnostic Medicine (ABEM). Howard began his four-year term in May.

The ABEM is an independent credentialing body in electrodiagnostic medicine for neurologists and physiatrists. Electrodiagnostic medicine is the study of diseases of nerves and muscles. Electrodiagnostic studies are used to diagnose diseases such as carpal tunnel syndrome, pinched back nerves and amyotrophic lateral sclerosis (Lou Gehrig's disease).

Berman appointed to the American Heart Association

Jeffrey M. Berman, MD, professor of anesthesiology, appointed to the American Heart Association (AHA) Programs Administration Committee last June, has been reappointed as AHA Pediatric Advanced Life Support Course (PALS) National Faculty. The goal of the PALS course is to aid the pediatric healthcare provider in developing the knowledge and skills necessary to efficiently and effectively manage critically ill infants and children, resulting in improved outcomes. Skills taught include recognition and treatment of infants and children at risk for cardiopulmonary arrest; the systematic approach to pediatric assessment; effective respiratory management; defibrillation and synchronized cardioversion; intraosseous access and fluid bolus administration; and effective resuscitation team dynamics.

Roth receives prestigious Distinguished Investigator Award

Bryan L. Roth, MD, PhD, of the UNC School of Medicine, has been selected by NARSAD to receive its prestigious 2008 Distinguished Investigator Award.

NARSAD, the world's leading charity dedicated to funding research on psychiatric disorders, will provide Roth a one-year grant of $100,000 to advance his research on schizophrenia.

Roth, a professor of pharmacology, is one of 11 outstanding scientists selected to receive the award, a highly competitive grant program for investigators of brain and psychiatric disorders who have established themselves as leaders in their fields.

"Dr. Roth exemplifies the kind of individual we try to single out for the Distinguished Investigator Award: an outstanding scientist, representing the very best in the field, with an important body of work behind him, and currently pursuing innovative and promising research," said Geoff Birkett, president of NARSAD.

Henning honored by pediatric gastroenterology society

Susan J. Henning, PhD, has been selected by the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) to receive its 2007 Distinguished Service Award.

Henning is the first nonphysician to receive the award. She is also a new member of the UNC School of Medicine faculty, with full professor appointments in the Division of Gastroenterology and Hepatology and the Department of Cell and Molecular Physiology. She came to UNC from Baylor College of Medicine. Her research has been continuously funded by the National Institutes of Health since 1976.

Dr. Susan J. Henning

According to NASPGHAN, Henning "single handedly brought together a unique blend of mentors and organization in developing a research fellowship training program at Baylor in pediatric gastroenterology that has served as a model for others around the country. Her NIH-funded training grant has been continuously renewed since 1991. Her research interests have included: the regulation of intestinal development, with emphasis on molecular mechanisms; isolation and characterization of intestinal stem cells; and the intestine as a site for gene therapy.

Changes to The Co-Founders' Club

On July 1, 2008, the qualifying level for membership in the Co-Founders' Club, the Medicial Foundation of NC, Inc.'s annual giving recognition society, will be raised to $2,000 or more in gifts during the fiscal year to any area in UNC School of Medicine or UNC Hospitals. We look forward to extending this special recognition to these generous alumni and friends and thank all our annual donors for their continued support.

Medical Foundation Web site gets a facelift

The Medical Foundation of North Carolina, Inc.'s Web site has recently changed its address and received a new redesign courtesy of the UNC School of Medicine's Office of Information Systems. At the beginning of this year, the UNC School of Medicine and UNC Health Care launched new Web sites with a coordinated look and feel, and the Medical Foundation followed suit in March. It is hoped that this new online coordination will provide a common and branded identity throughout the sites that, most importantly, provides information to external audiences in an easily navigable and user-friendly way. The Foundation's new Web address is www.med.unc.edu/medfoundation.

UNC alumnus, Kardon Foundation give $1 million to establish Kittner Eye Center

David Kittner, an attorney in Philadelphia and an alumnus of the University of North Carolina at Chapel Hill, and the Samuel and Rebecca Kardon Foundation have given $1 million to establish an endowed innovation fund for the future of the UNC School of Medicine's Department of Ophthalmology.

The gift is the largest ever received by the department, which will now operate and expand its patient care, educational programs and services, and clinical research projects and activities under a new name: the Kittner Eye Center. A ceremony to officially launch the new name was held on June 12.

"Our future is much brighter now," said Dr. Travis A. Meredith, chair of the Department of Ophthalmology. "The need for ophthalmology services is increasing, and this endowment will help us provide even more advanced and technologically sophisticated services for our patients.

"The entire UNC faculty and staff are extremely grateful for this historic gift. This marvelous generosity will enable us to be ever more successful in our missions of teaching, research and serving all of the people of North Carolina," said Meredith, who is also the Sterling A. Barrett Distinguished Professor of Ophthalmology.

Kittner graduated from UNC in 1939 with a business administration degree and now practices law in Philadelphia. In addition, he has two brothers, three nieces and two nephews who all have degrees from UNC. Kittner said he has a strong love for Carolina, and learned the value of good vision after witnessing how various members of his family and others benefited from advanced eye care. "I thought that the gift would be a great way to help people well into the future," Kittner said.

Previously Kittner and the Samuel and Rebecca Kardon Foundation—a charitable foundation based in Philadelphia,

Pa.—have given more than $300,000 to various components of the university, primarily to the Rose and Louis Kittner Scholarship Fund, which provides need-based scholarships for undergraduate students.

Annual expendable funds earned from the endowment will be used for patient care projects such as the purchase of state of the art equipment, technology, clinical research, education and other focused projects. The specific use of funds will be approved annually by the department's chair.

Distinguished professorship to honor UNC's Cefalo, Bowes

A fundraising effort is under way to create a professorship celebrating the careers and contributions of two teachers and physicians in the department of obstetrics and gynecology at the UNC School of Medicine.

The Robert C. Cefalo/Watson A. Bowes Jr. Distinguished Professorship in Maternal-Fetal Medicine has been established in honor of the late Dr. Robert C. Cefalo, who was a professor emeritus of obstetrics and gynecology and director of the medical residency and fellowship programs at UNC Hospitals for 25 years, and Dr. Watson A. Bowes Jr., who is also a professor emeritus in the obstetrics and gynecology department.

The legacy of a professorship was the vision of Cefalo, and he chose to share the naming of this endowment with Bowes, his long-time friend and colleague.

The Cefalo/Bowes professorship will provide salary and research support to recruit or retain a renowned faculty member in the division of maternal fetal medicine, continuing Drs. Cefalo and Bowes' service to medicine and commitment to the training of new physicians.

The goal is to raise $500,000 to establish the endowment, at which point UNC will then be eligible to apply for state matching funds from the North Carolina Distinguished Professors Endowment Trust. So far, about $373,000 has been raised.

During Cefalo's tenure as director of graduate medical education, UNC earned national recognition for the development of "best practices" in residency and fellowship programs. He headed UNC's physician training programs from 1981 to 2006 and served as assistant dean for graduate medical education. He also served as director of maternal fetal-medicine from 1979 to 1997. Cefalo retired in 2006. In 2007, he received the Courage to Lead Award from the American Council on Graduate Medical Education.

Bowes retired in 1999 after 30 years in medicine, the last 17 of which he spent at the UNC School of Medicine. He is the past chairman of the committee on ethics of the American College of Obstetricians and Gynecologists and was a member of the Committee on Bioethics of the American Academy of Pediatrics from 1996 to 1999. He also served as co-editor-in-chief of *The Obstetrical & Gynecological Survey*.

To make a gift to the Cefalo/Bowes Distinguished Professorship endowment, contact Kelly Moore, development director for the UNC's Department of Obstetrics and Gynecology, at (919) 843-4923, or visit http://www.med.unc.edu/medfoundation.

50s

Dan Anderson Martin, CMED '50, is the medical director of the Hopkins County (Ky.) Health Department; and although he retired as the director of its education division three years ago, he remains a board member of the Trover Health System in Madisonville, Kentucky.

70s

James Frakes, MD (House Staff '78-'80), was named a master of the American College of Gastroenterology last fall, an honor bestowed on fewer than 100 physicians in the 10,000 member organization. An expert in therapeutic pancreaticobilary endoscopy (ERCP), practice management, healthcare policy issues, and endoscopy ambulatory surgery centers, he is in private practice with Rockford Gastroenterology Associates, Ltd., Rockford, Ill., where he served as managing partner for more than 20 years. Frakes and his wife, Nancy, have been married 40 years and have two grown children.

80s

Kenneth Hollingsworth, MD '80, AB '76, of Seaford, Delaware, recently joined Bay Anesthesia Associates at Kent General Hospital in Dover. He is a staff anesthesiologist.

Charles B. Nemeroff, MD '81, PhD '76, Reunette W. Harris Professor and chairman of the Department of Psychiatry and Behavioral Sciences, Emory School of Medicine, Atlanta, is the new president of the American Foundation for Suicide Prevention. This national organization, based in New York City, funds research and educational projects to reduce suicide, a leading cause of death worldwide. He will serve a three-year term. Additionally, he is a recipient of the Judson Marmor Award from the American Psychiatric Association and will lecture at its annual meeting in May in Washington, DC.

John Thomas Newton, MD '81, of Clinton, NC, has been named the 2007 Family Physician of the Year by the North Carolina Academy of Family Physicians (NCAFP). The award recognizes family physicians who demonstrate exceptional commitment, dedication, and selfless leadership to family medicine and mankind. Newton is in private practice in Clinton, and resides there with his wife of thirty years, Annette. They have three grown children.

James Hubbard, MD, (House Staff '85-'88), of Dubuque, Iowa, has been serving as president of the Iowa Medical Society for the past year and is the first pediatrician to hold that office. He currently practices at Medical Associates Clinic in Dubuque.

90s

Jodianne T. Carter, MD (House Staff '92), an ophthalmologist, is a partner with Heart of America Eye Care in Overland Park, Kansas.

00s

James Rider, MD '00, of Denmark, Wisconsin, welcomed a son, Joshua, in January 2007. After serving as chief fellow at the University of Minnesota cardiology program, the elder Rider, a cardiologist, accepted a position with Cardiology Associates of Green Bay.

Stanley Allen III, MD '03, of Austin, Texas, is an assistant professor of emergency medicine in the Texas A&M Health Science Center at the Scott & White University Medical Campus in Round Rock, Texas.

In Memoriam

Ernest Craige, MD, BA '39, the first chief of cardiology at UNC, died January 24, 2008 at the age of 89.

Craige was an extremely influential figure who had an enormous impact, both within the UNC School of Medicine and nationwide within the field of cardiology, said Dr. Cam Patterson, UNC's current chief of cardiology.

"Ernie Craige was one of the first academic cardiologists in the United States," Patterson said. "Many of the aspects of the physical exam that we take for granted today are the result of discoveries and refinements by Dr. Craige."

"In addition, he was one of the most loved figures in the history of the UNC School of Medicine. I have heard dozens of Ernie Craige stories as I have traveled across the country. He is remembered clearly and fondly by everyone who crossed paths with him through the years."

Patterson holds the Ernest and Hazel Craige Distinguished Professorship in Cardiology named after Craige and his wife.

Dr. Ernest Craige

Craige earned a bachelor of arts degree at the UNC-Chapel Hill in 1939 and then earned his medical degree at Harvard Medical School in 1943. From 1944 to 1946 he served in Europe with the US Army and then resumed his medical training at Massachusetts General Hospital.

After completing his residency and fellowship training, Craige joined the UNC School of Medicine in 1952 as an assistant professor. He was named the first chief of cardiology at North Carolina Memorial Hospital, which opened that year on the UNC campus. He stepped down as chief of cardiology in 1978 but remained a professor in the School of Medicine for many years after that.

In 1979, the UNC Medical Alumni Association honored Craige with its Distinguished Faculty Award. In 1982, he received the American College of Cardiology's Gifted Teacher Award.

Craige is survived by Hazel, his wife of 61

years, their four grown children and five grandchildren.

Donations may be made in the name of Dr. Ernest Craige to UNC Cardiology, University of North Carolina Chapel Hill, Campus Box 7075, Chapel Hill, NC, 27599, to the attention of Linda Raftery.

Robert C. Cefalo, MD, PhD, professor emeritus of obstetrics and gynecology in the UNC School of Medicine and director of the medical residency and fellowship programs at UNC Hospitals for 25 years, died April 22, 2008 at the age of 74.

"Each of us who has been a part of this great medical school and hospital is indebted to Dr. Robert Cefalo for a quarter century of leadership of graduate medical education," said Dr. Brian Goldstein, chief of the medical staff at UNC Hospitals. "Bob was a master teacher, a kind mentor to many, and a supportive colleague. He will be missed."

Dr. Robert Cefalo

"Bob Cefalo was part of the fabric of UNC School of Medicine," said Dr. Daniel Clarke-Pearson, chairman of the Department of Obstetrics and Gynecology. "He had a passion for medical student, resident and fellowship training. He improved the care of mothers and their infants throughout our region, not only by his compassionate obstetrical care, but by his positive influence on all of us who had the privilege to learn from him."

During Cefalo's tenure as director of graduate medical education, UNC earned national recognition for the development of "best practices" in residency and fellowship programs. Two examples that resulted directly from Dr. Cefalo's efforts were the formation of the House Staff Council in 1982, and establishment of the House Officer of the Year Awards. Earlier this year, the awards were renamed the Robert C. Cefalo House Officer Awards in his honor. Cefalo also served as acting chairman of UNC's Department of Obstetrics and Gynecology and as director of the Division of Maternal and Fetal Medicine.

Cefalo earned his undergraduate degree at Boston College, his medical degree from Tufts University and his PhD from Georgetown University. In 1956, he entered the US Navy Medical Corps, where he received his advanced medical training and served until he joined UNC in 1979.

Cefalo was board-certified in obstetrics and gynecology and maternal-fetal medicine. He headed UNC's physician training programs from 1981 to 2006 and served as assistant dean for graduate medical education. He also served as director of maternal fetal-medicine from 1979 to 1997, as interim chair of obstetrics and gynecology in 1981-1983 and 2004-2006 and as interim director of maternal-fetal medicine in 2005-2006. Cefalo remained an active member of the UNC faculty until his retirement in 2006. In 2007, he received the Courage to Lead Award from the American Council on Graduate Medical Education.

Cefalo served terms as president and chairman of the American Board of Obstetrics and Gynecology and as president of the North Carolina Obstetrical and Gynecological Society. He was also honored by the North Carolina Governor's Commission on Reduction of Infant Mortality for contributions to the improvement of maternal and infant health.

He is survived by his wife, Mary, four grown children and six grandchildren.

In lieu of flowers, gifts may be sent to the Cefalo/Bowes Distinguished Professorship Endowed Chair, Medical Foundation of NC, 880 MLK Blvd., Chapel Hill, NC 27514; or the UNC Lineberger Comprehensive Cancer Center, UNC-Chapel Hill, CB 7295, Chapel Hill, NC 27599-7295; or Holy Cross Catholic Church 2438 S. Alston Avenue, Durham, NC 27713.

Marlys Marie (Panning) Mitchell, PhD, FAOTA, and professor emerita in the Division of Occupational Science in the Department of Allied Health Sciences at UNC, peacefully entered her eternal home on March 8, 2008 surrounded by loved ones.

Mitchell developed UNC's academic program in occupational therapy and became its first director in 1978. In 1984 she returned to the classroom as a full professor, teaching until her retirement in 1994, whereupon she continued to serve as professor emerita until her death. Among her many professional honors and achievements, Marlys was recognized in 1992 with AOTA's Award of Merit, and was inducted into the Roster of Fellows of the AOTA. She also received the Terry Sanford Award for Creativity and Innovation in Teaching in 1966 and the Suzanne Scullin Award for Outstanding Professional Contributions to Occupational Therapy in North Carolina in 1979.

Dr. Marlys Mitchell

She is survived by her husband Earl, a retired professor from the UNC physics department; her brother, John; and twelve nieces and nephews.

Memorials may be designated for the Saints of Grace Memorial Fund at Grace Lutheran Church, 824 North Buchanan Blvd., Durham, NC 27701.

Everett Hews Ellinwood, Jr., MD '59, age 73, died January 5, 2008 at his home in Durham.

After graduating from Greensboro Senior High School, he attended UNC where he earned his undergraduate and medical degrees. After his residence in psychiatry, he served in the US Public Health Service in Lexington, Ky., as chief of Addiction Services for members and family of the military and while earning the rank of major. After receiving an honorable discharge, he subsequently relocated to Durham, and began his career at the Duke University Medical Center.

Ellinwood was the director of behavioral neuropharmacology at Duke. He served more than 42 years as professor of psychiatry and pharmacology and was awarded one of the first training grants from the National Institute of Drug Abuse.

Ellinwood was an internationally recognized scientist in addiction research and published more than 300 papers. He served as president of the George Ham Society and president of the Society of Biological Psychiatry. He was on the editorial board of numerous psychiatric journals including the *Journal of Biological Psychiatry*.

Surviving are his three children, his wife, Angela, and his long-term friend and devoted companion, Cackie Joyner. He is also survived by his brother, George, and his sister, Elizabeth.

Samuel Lester Parker, Jr., AB '38, CMED '40, a clinical professor in the Department of Obstetrics and Gynecology at UNC from 1956-1990, passed away April 3, 2008 at Lenoir Memorial Hospital in Kinston, NC.

Parker graduated from Carolina in 1938. He entered the two-year medical school at UNC and graduated from George Washington University School of Medicine in 1942.

While serving his first internship at Grady Memorial Hospital in Atlanta, he entered the US Army Medical Corps. He served from 1943-1946 in the European Theater and was discharged at the rank of Major. Parker began his training in obstetrics and gynecology as a junior assistant resident at Duke Hospital. He then served as chief resident at Watts Hospital in Durham from 1947-1949. This was followed by a six-month preceptorship at Mercy Hospital in Charlotte, before going to Boston to train in gynecological pathology at Harvard University's Free Hospital for Women. He began his OB-GYN practice upon completion of his training in 1951.

He was a diplomat of the American College of Obstetrics and Gynecology, a life member of the American Medical Association, North Carolina Medical Society and the Lenoir-Green County Medical Society. He served as president of Lenoir Memorial Hospital medical staff in 1952-1953 and 1963-1964

Parker is survived by his wife, Frances, their four grown children and five grandchildren.

Memorials may be made to the First Presbyterian Church Bells in the Tower Fund, 2101 N. Heritage St., Kinston, NC 28501, or the Bayard Carter OB-GYN Society Endowment, C/O Dr. W.R. Goldston, 33414 Horseshoe Bend, Raleigh, NC 27613.

John Sutton Barlow, '44, MS '48, CMED '51, of Concord, Mass., died Feb. 15, 2008.

Barlow graduated from UNC in 1944 with a major in physics and mathematics. He served in the US Navy from June 1944 to August 1946, then served in the Naval Reserve as a lieutenant junior grade until 1948, when he returned to UNC for a master's degree in physics. Shortly after beginning further graduate studies at Johns Hopkins University, he decided to apply to medical school and was allowed to take pre-med courses along with graduate physics courses.

He returned to Chapel Hill for the first two years of medical school, then transferred to Harvard Medical School and graduated in 1953. Barlow then began his career of more than 50 years as a neuroscientist at Massachusetts General Hospital. He was a past president of the Eastern Association of Electroencephalographers and the American EEG Society. In more recent years, he designed electronic models to demonstrate how parts of the brain work. He authored many scientific articles and two books in his field.

He is survived by his wife of 57 years, Sibylle (Jahrreiss), their three grown children, six grandchildren and one great-granddaughter.

Donations in his memory may be made to the Department of Physics and Astronomy, UNC-Chapel Hill, 272 Phillips Hall, Campus Box 3255, Chapel Hill, NC 27599, or the Countway Library of Medicine at Harvard Medical School, 10 Shattuck Street, Boston, MA 02115.

UNC Medical Bulletin

Spring 2008 — Vol. 55, No. 2

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For the greater good

Continued from page 13

dialogue. "If the evidence flies in the face of common practice, it is common practice that needs reform," he says.

An office with handlebars

Hadler and his wife Carol, a clinical social worker, have been married 42 years and have two grown children. They still live in the house where their children grew up, in a quiet, wooded neighborhood just off campus that has been home to many other UNC medical faculty.

One of those neighbors was Dennis Ross, MD, PhD, an avid cyclist. "Dennis moved into the house on the circle that had been built by UNC's golf coach. One day—this had to have been in the 1980s—Dennis said he and a small group were going for a bike ride and asked me if I'd like to come along. They had an extra bike. So I got on this bike and discovered my slow twitch muscle fibers, and I loved it," Hadler said.

Hadler quickly became an avid cyclist himself. For him, the time he spends on his bike is not only great exercise, but also a very valuable, uninterrupted time to think. "I consider my bike as part of my office. It's how I replay thoughts. I tend to do the same loops, so I know every pothole and every dog—I can totally space out."

Hadler has coupled his love of cycling with his appreciation of travel and other cultures. He and Carol travel all over the globe to find great cycling treks. A year ago, they cycled from Prague to Vienna. More recently, it was Budapest to Kraków. "We'll do a century (100 miles in cycle-speak), we don't care, as long as after a long day's ride there is a great hotel, great food and a great shower waiting for us. And if you throw in great wine, that's even better," Hadler says.

Europe and the Pacific Rim have some beautiful countryside, but, according to Hadler, some of the best long-distance cycling is back home in North Carolina. "Ocracoke to Manteo—it's a century without a hill. If you have a headwind, it can be a very long day. But if you have a tailwind, it's cycling heaven."

Hadler is currently using his "other" office for the final revision of the manuscript for his next book, tentatively titled, *You Need Spine: Clinical, Social, and Policy Consequences of Low Back Pain*, due out next year.

Climbing for cancer

Continued from page 17

After a few minutes, Harriet eventually gave in and descended, with her brother and four other climbers, back to the camp at 16,000 feet.

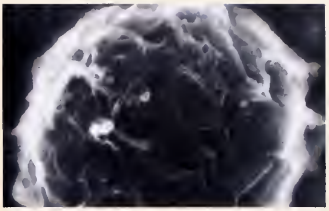
Soon after she returned to the US, Harriet made a visit to her caregivers at Lineberger and presented them with a check for $15,000 for the Center's Patient and Family Resource Center. Altogether, the seven Climb for Cancer climbers had raised $120,000 for cancer support and research. In its five-year existence thus far, the Farb's Climb for Cancer Foundation has raised more than $850,000.

Says Ron, "Harriet really saw the climb as an opportunity to bring hope to other cancer patients, to let them know that anything is possible and that life isn't over even though you've been diagnosed with this disease."

Mission accomplished.

Designed to inform and inspire

Continued from page 3



faculty, the staff, and the students of the School of Medicine of the University of North Carolina.

It is designed to convey to the alumni of the School of Medicine interesting data about the program of medical activities at Chapel Hill, and to help these alumni keep in touch with each other in their mutual concern for progress at Chapel Hill.

It is designed to tell laymen everywhere what is available at Chapel Hill and what is needed in the field of medicine and health.

It is designed to serve the Medical Foundation as a medium through which opportunities of service may be presented to the end that the total health of all North Carolina may be enhanced.

With that sort of pattern, the BULLETIN is not a scientific magazine per se, nor a news journal only. It is hoped to combine these features in a thoroughly readable little magazine that will be read regularly and eagerly by our friends everywhere.

And so it seems the *Bulletin* has come full circle. Although much has been accomplished in this first year, I believe this magazine has even more potential to inform and inspire. I encourage you to let me know your thoughts and suggestions about how we can make the *Bulletin* the best it can be for yet another 55 years.

100% of this story is **true**

By Lucius Blanchard Jr., MD '68

Lucius "Luke" Blanchard Jr. recently made a $3 million estate bequest to the Medical Foundation. With an additional transfer of stock and other commitments, his generosity has led to a total of $5 million in gifts. In the story that follows, he tells us why.

I have always believed that one of my responsibilities as a father is to make sure that my children are occasionally reminded how much better they have it in their life than I did.

When I write checks for their college expenses, I do it slowly so they cannot get away quickly. I tell them that my family was very poor and that, when I left home after high school to go to UNC, my parents gave me the $400 they had saved in my college fund and that was all the money I was given for my education. I explain that I had to work two jobs to pay for all my expenses—how I would get up at 5 a.m. to cook breakfast in the Lenoir Hall cafeteria, then attend classes all morning, go to my second job in the psychology lab in the afternoon, and study in the library at night. That was how I got through college. They have heard this story many times. Of course, 95 percent of it is not true.

The truth is that my education was paid for by people I did not know. I assumed they were alumni who gave their annual donations to scholarship funds, or left their insurance benefits, or established endowments that would help people like me. Without those scholarship grants for my tuition, I would not have been at UNC. There were people in the student aid office who did not know me, but arranged low interest loans to help pay for my living expenses while I was in school. Without those loans, I would not have been at UNC. The small amount of money I earned was enough to buy some meals in the Pine Room and some beers in the Rathskeller, but little more. I wondered, then, what motivated those donors to give; but mainly I was just glad they did. I knew my education depended on their generosity.

The other part of the story my son and daughter have to listen to is that, when I was at Carolina, it was at its best. Chapel Hill was 150 miles and a world away from my little eastern North Carolina railroad-crossing town of Ahoskie. Chapel Hill in the 1960s was a center for education, protest, and dramatic changes that were coming in our society. It was a place where I learned in the classroom from great teachers, and on the campus from great new friends, and spent long nights in the dorm discussing things we hardly understood but seemed to be important and relevant. We celebrated anytime the Heels beat Duke and mourned the death of JFK. We picketed the College Cafe, demonstrated in Franklin Street, and ran from the cops and dogs. I learned a profession from the medical school, met my wife, lost my innocence, faced my prejudices, and I knew this would be the finest time in my life. And that story is still 100 percent true.

When I walk across the campus now, I am amazed at the changes I see each time I visit. The streets and paths that used to be so automatic to me now require a campus map to keep me from getting lost. The stores along Franklin street are new and less traditional than when I shopped there, and I miss Harry's Cafe and the Porthole. I still like to walk through the old campus by the original

dorms and the planetarium and Silent Sam, and pass the Old Well and through the arboretum. I am proud to be a small part of those traditions that extend hundreds of years in the past.

When I see all the new students I am envious of what they will have in their future at UNC, and I also wonder when it was that the university began admitting children. I sat on the steps of South Building and watched the students crossing the quad, walking with their friends and stopping to meet other people. Individually they are all unknown to me, and I to them even if they did happen to notice an old alumnus sitting on the steps, but I know they can all become part of a "Carolina Family." I think those people who paid for my education gave the money because they also felt they were part of that family. Their experience at UNC must have been important enough for them to want to give other people the chance to go there, even students they did not know and would never meet.

I know it is my generation's time to continue that legacy, but there is something different, partially selfish, that I want. I do not want to be the unknown stranger who gave his donation when he died. Just as I hope to live long enough to see what my children become, I would like to see what becomes of the family of medical students that we help at Carolina.

When I thought about how to plan my gift, I decided to do it the way I would treat a favorite niece or nephew if they came to me to help pay for their education. The Carolina Family Fund and the Medical Alumni Loyalty Fund together will give four-year scholarships to cover the cost of tuition, and a separate Carolina Family Loan Fund will provide interest-free loans of $20,000 a year for four years. The students selected will be those with the greatest need for whom an education at Carolina would be impossible without financial assistance. They will get the benefit of about $100,000 during their four years at the UNC School of Medicine. Repayment of the loan is on the honor system, and the student will be asked to repay the loan within 10 years so that it will be available to new recipients, and on a voluntary basis to fund one additional $100,000 scholarship for the "Carolina Family" during their lifetime.

The amount of money I can give is small when compared to the need of many students who do not have the money for medical school and can look forward to graduating with a debt of $130,000 (this is the national average; UNC's average is $82,000), and the certainty of lower incomes in medicine, especially in primary care. I expect my reward to be large in what I will gain from knowing the scholarship recipients, learning from them, and following their progress and careers. I hope there will be other alumni who will want to make their contribution and become a member of this branch of the "Carolina Family" made up of donors, recipients, and recipients who will become donors in the future.

One of my friends told me it was a lot of money I was giving away. Not really. I am just returning it to where it came from...

Wanting to help a disadvantaged student is easy. Making a $100,000 commitment is difficult and many alumni cannot afford it, but some can. Wanting to help finance a medical student's education every 10 years is easy, and that is what a $100,000 donation will do. A donor can have a permanent, named Carolina Family Fund, such as Dr. George T. Grigsby and Jennifer Schnorr have. An entire class could pool their donations and fund a permanent class scholarship to adopt students. With strong alumni support, Carolina will get the students and teachers who will make it the best public university in the US. One of my friends told me it was a lot of money I was giving away. Not really. I am just returning it to where it came from, since I have had the benefit of those scholarships and loans for almost fifty years.

Dr. Blanchard practices at the Las Vegas Skin & Cancer Clinics, Ltd. He lives in Las Vegas.

Every year, US hospitals throw away millions of dollars worth of unused medical supplies,

while in many impoverished countries, thousands of people die due to lack of such supplies. On the other extreme, American hospitals discard tons of unused medical supplies in the interest of optimal surgical management and protection from litigation.

Created by UNC physicians, medical students and hospital staff, MEDWorld is a volunteer organization designed to collect and recycle unused medical supplies that would otherwise be discarded. The materials they collect are sent to developing countries where they can be used in clinics and hospitals that serve the poor. MEDWorld has uncovered an opportunity to do community service on a global scale while improving staff morale and reducing hospital waste. MEDWorld is an environmentally responsible alternative for our hospitals to reuse disposable recyclable material to save lives across the world.

For more information about MEDWorld and to explore volunteer opportunities, visit the MEDWorld website at http://www.med.unc.edu/medworld/ or email volunteer co-directors, Tessa Hunt (scubatess@yahoo.com) or Alice Chuang (achuang@med.unc.edu).

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UNC MEDICAL BULLETIN

FALL 06

UNC builds for North Carolina's health care future

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Creating a CAROLINA LEGACY

Photo by Fred Bennett

An Exponential Gift

MOREHEAD ALUMNUS AND RETIRED HEART SURGEON HONORS UNIVERSITY FOUNDATIONS THAT SHAPED HIM

If you're interested in creating your Carolina legacy, please contact Jane McNeer, vice president of The Medical Foundation of North Carolina, Inc., at 919-966-3946 or 800-962-2543 or Jane_McNeer@med.unc.edu. You may also contact Candace Clark, associate director of planned giving, at 919-962-3967 or 800-994-8803 or createalegacy@unc.edu.

The *Berryhill Society*

JOE CRAVER '63, '67 (MD) just retired from a 31-year career as a full-time cardiac surgeon and professor of surgery at Emory University School of Medicine. Reflecting on his life, Craver felt that there were some pivotal moments for which he was very grateful. The first big one, he said, after being born to and reared by his parents, was attending Carolina as a Morehead Scholar.

"THIS AWARD PRESENTED significant opportunities as well as challenges to me — to justify their selection," he said. "I endeavored to meet those, and I'm now even more grateful for their support and for UNC."

LEADERSHIP BECAME SYNONYMOUS with Craver on the Carolina campus. He co-captained the football team and received numerous awards as an undergraduate as well as a student at the UNC School of Medicine.

CRAVER FELT THAT he would like to make a tangible gift to UNC to express his gratitude. He and his wife, Amelia, decided that they were not as dependent on his 401(k) retirement funds as expected. Also, because these funds are taxed at the maximum rate if used personally or passed as inheritance, they seemed ideal for a charitable gift. Craver sought a creative way to use these funds while he was still alive. He learned he could buy a commercial annuity within his IRA rollover account and name the UNC Medical Foundation and the Morehead Scholarship Foundation as charitable beneficiaries. Upon his death, they would receive the full corpus (currently valued at $1.25 million, plus their growth) as endowment funds. The UNC Medical Foundation will use $250,000 of these funds to establish the Joseph M. Craver Teaching Professorship. He also will make annual gifts from the annuity income he receives to provide each foundation with current resources during his lifetime.

"THIS WAY, THE benefits start now for both of us," Craver said.

CRAVER ALSO PURCHASED life insurance policies for each to protect the values of the ultimate principal distributions to both foundations.

THE SON OF TEACHERS, Craver enjoyed teaching every single day of his professional career, and thinks of teaching as a way to "extend one's life's work exponentially." He is now taking that legacy of teaching in another direction by showing others how to discover creative ways to use their resources.

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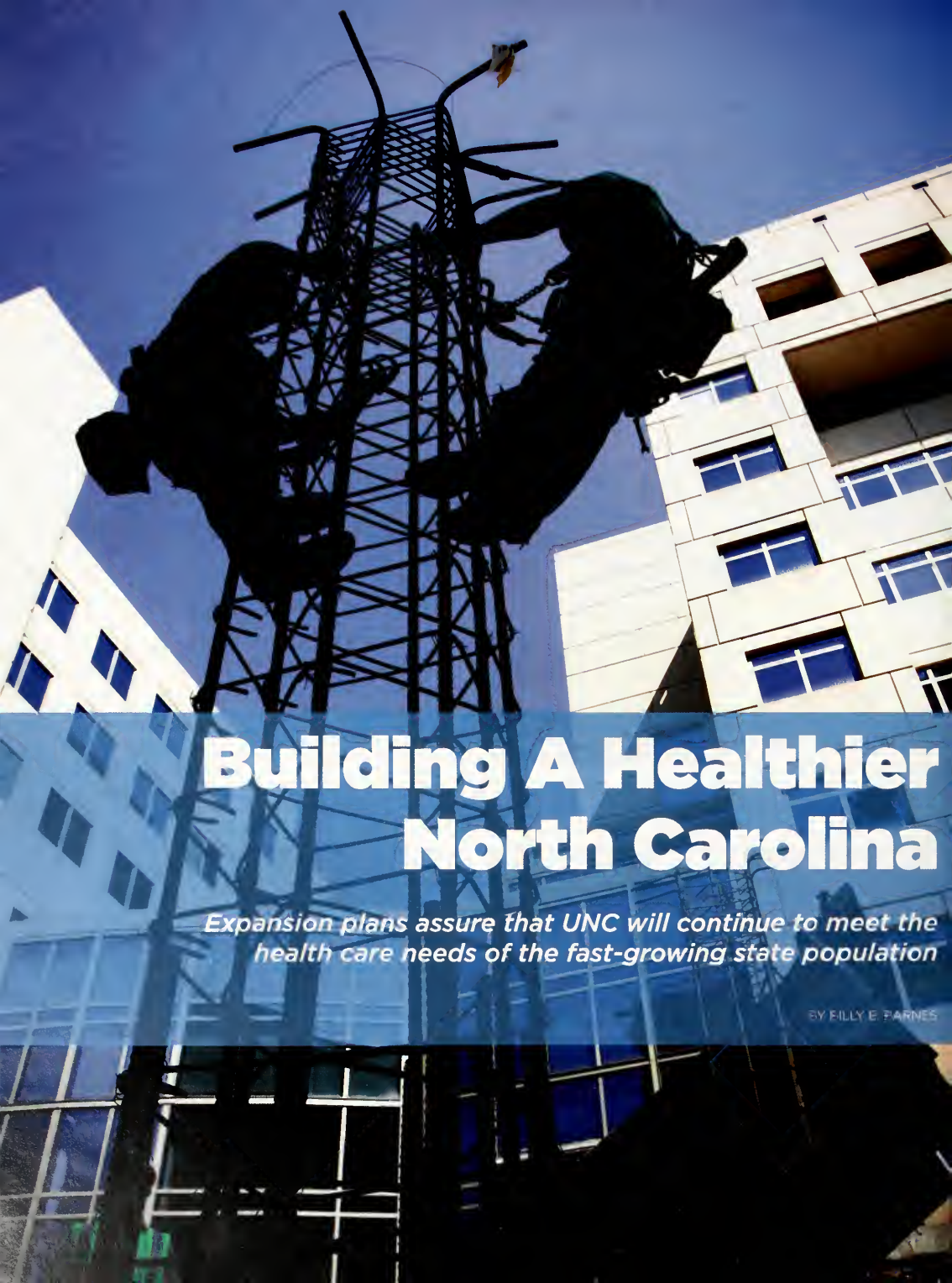
ON THE COVER

UNC Health Care and the School of Medicine are expanding to meet the growing needs of an ever-increasing state population. See story on page 2.

Photo by Brian Strickland



Building A Healthier North Carolina

Expansion plans assure that UNC will continue to meet the health care needs of the fast-growing state population

BY EILLY E. PARNES

"**By 2030, the state will grow in population** from nine million to about 13 million. That is the equivalent of moving everyone who lives in South Carolina today, to North Carolina," Dr. William L. Roper, dean of the School of Medicine and CEO of UNC Health Care, explains. "We need the best facilities in Chapel Hill and throughout our state so we can conduct cutting-edge research, provide treatment, and adequately train the next generation of doctors and health care workers." The "best facilities" to which Roper refers will provide expansion designed to meet the needs of North Carolinians as the state's population grows.

With the faltering US economy, one may wonder why UNC has significant expansion plans in the works. The answer lies in North Carolina's many health care priorities: cancer, heart disease, diabetes, the aging population, obesity, the physician shortage—all of which, if left unaddressed, could lead to serious consequences for the state.

"We need to start now before our challenge turns into a crisis. As we face these tight economic times, we need to make sure we are smart with the resources we have and that we continue to lay the groundwork to meet our state's health care needs in the future," says Roper.

Near-term expansion at UNC Hospitals will be implemented in two phases.

Phase one calls for three new facilities:

(1) a modern 321-bed patient tower;

(2) a spacious patient-entrance wing for registration and room assignment; and,

(3) a cluster of 38 state-of-the art operating rooms including procedure rooms, adult cardiac catheterization labs, electrophysiology labs, and other procedure spaces.

Phase two of the plan includes a pair of service and support buildings on the northern edge of the medical complex (near Kenan Stadium).

The new bed tower won't be just another stack of hospital rooms. For years it has been evident that medical facilities built in the 1950s and '60s are woefully outdated and unable to accommodate the wiring, piping, and air-handling hardware required for state-of-the-art health care. Rooms in UNC Hospitals' new bed tower will be ultramodern units capable of providing several levels of care that may be needed. This versatility will help match a specific patient's needs to the room required.

At the School of Medicine, expansion has proceeded at a rapid pace for the past six years and will continue to do so well into the future.

Roper says, "Within 20 years, North Carolina will have 25 percent fewer primary care physicians than it should, especially in rural areas. This makes having the right facilities all the more important so we can attract and train the best and brightest.

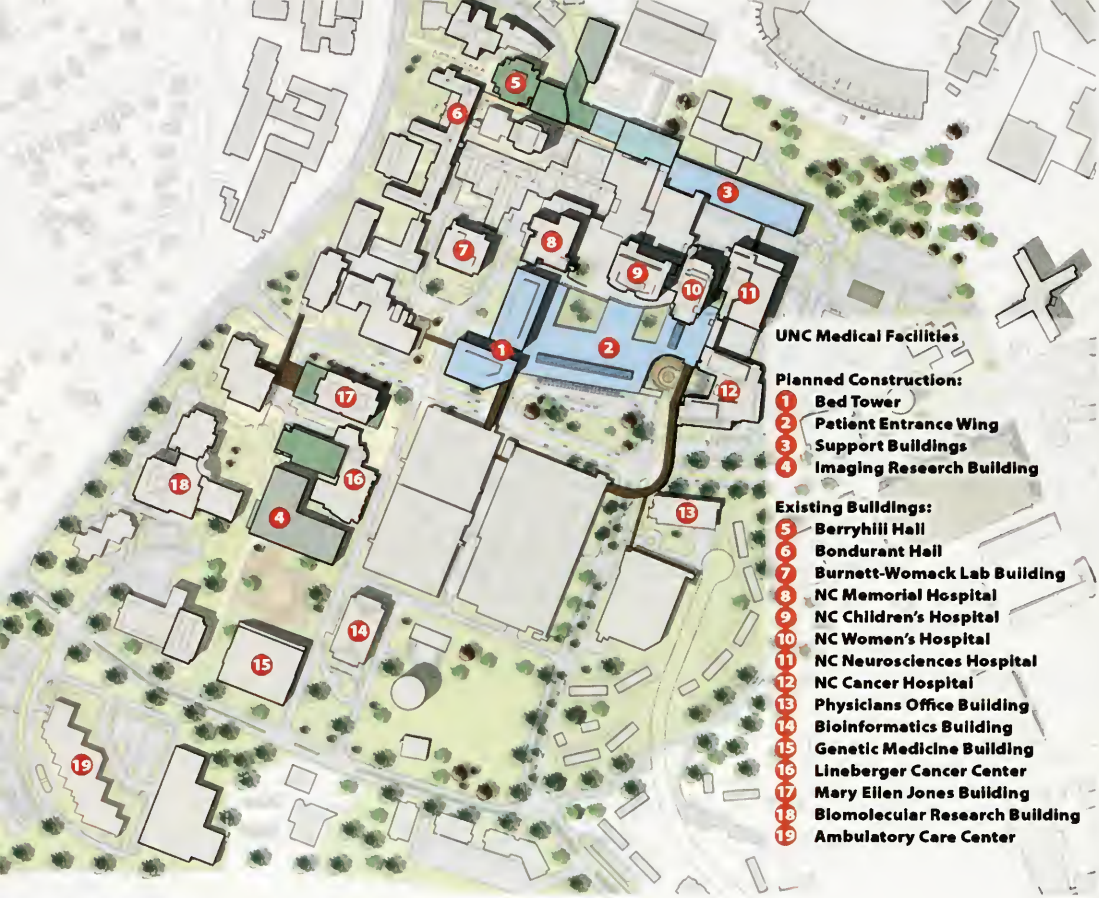
"We'll also need facilities to treat more patients, especially as cancer and other chronic diseases continue to grow. Public health officials say that, over the next 20 to 30 years, the number of cancer cases in the state will double. The survival rate for many cancers is increasing, making it more of a chronic disease than it once was. To conduct cutting-edge research, we will need world-class facilities."

By 2030, the state will grow in population from nine million to about 13 million. That is the equivalent of moving everyone who lives in South Carolina today, to North Carolina.

The University Cancer Research Fund, approved in 2007 by the North Carolina General Assembly, was established to accelerate cancer research at the UNC School of Medicine and the Lineberger Comprehensive Cancer Center. The fund began with $25 million in 2007 and is slated to increase to $50 million per year beginning in 2009.

In addition, UNC recently received a $61 million Clinical and Translational Science Award from the National Institutes of Health to fund the North Carolina Translational and Clinical Sciences Institute. Roper says the award will transform the way research is performed in North Carolina by enabling UNC to partner with communities to more rapidly and efficiently translate scientific discoveries into improvements for the health of the state's citizens.

Clearly, the UNC School of Medicine must expand its facilities to meet these needs, and the tall cranes and helmeted construction crews are busy making it happen



The above illustration shows the planned layout of the medical campus at the completion of the master plan.

Recent additions and renovations

An amazing amount of construction has been completed in the past seven years. The Bioinformatics Building, completed in 2002, provides 156,653 square feet of offices and work space for 400 staff.

The new Biomolecular Research Building provides 21st century laboratory space and equipment to complement the scores of brilliant minds at work in search of new medical discoveries. Completed in early 2004, the structure features seven floors (260,000 square feet) of research laboratory space, plus two auditoriums—one seating 200 and the other 500. This structure, attached to Taylor Hall and the Neuroscience Research Building (completed in 2001), provides research labs for cardiology, infectious diseases, gastrointestinal disorders, and pediatric endocrinology. The building provided the first new lab space since the early 1990s and the first open-lab architecture to be found at the School of Medicine. Instead of a series of small rooms, the lab space is a 3,000 square-foot open area in which teams of researchers can be in constant collaboration. That's a radical change from the traditional configuration where researchers work alone in small rooms.

Ever mindful of the necessity to preserve both the environment and UNC's architectural history, several older buildings have been retrofitted to meet this century's needs. Soon after the completion of the Bioinformatics and Biomolecular Research buildings, the old nine-story, 190,000 square-foot Burnett-Womack lab building was emptied, gutted, and rebuilt. Reopened in 2005, it now houses six floors of clinicians' offices and three floors of labs, including the largest biosafety level-three lab on the UNC campus. With this lab in place, School of Medicine researchers can safely study airborne diseases such as equine encephalitis.

The School of Medicine has operated for more than half a century without a building that visibly stood out as its hub and headquarters. That situation has changed, and handsomely so. The old Medical Sciences Research

Building, located south of the School of Nursing, was gutted, its size doubled with a 50,000 square-foot addition, and reopened in 2006 with a grand new façade facing Columbia Street. The building was renamed Bondurant Hall, in honor of Dr. Stuart Bondurant, who served as dean of the School of Medicine from 1979 to 1994. Today it houses the School of Medicine's main administrative offices, plus the Department of Allied Health Sciences.

The 107,455 square-foot Physicians Office Building is the most recently completed structure. It contains offices for all physicians who will be practicing in the new North Carolina Cancer Hospital, plus physicians and staff in the departments of emergency medicine, neurology, and otolaryngology.

Now underway or on the drawing board

Recent media reports have noted that, despite many decades of concentrated research, cancer stubbornly remains one of the world's most life- and lifestyle-threatening diseases. In 2009, an exciting response to this challenge will be the opening of the North Carolina Cancer Hospital, providing a platform for major advances in patient treatment and discovery of new therapies by world-class cancer researchers. This $180 million, 320,000 square-foot building will provide cancer patients with services including radiology/imaging, infusion, mammography, radiation oncology, phlebotomy, genetic counseling, clinical laboratory services, rehabilitation, as well as a pediatric clinic with a play area, outpatient clinics, and inpatient beds. Patient parking will be provided near the building's main entrance.

Dr. Richard Goldberg, chief of Hematology/Oncology at UNC Health Care and associate director for clinical research at the UNC Lineberger Comprehensive Cancer Center, will serve as the Cancer Hospital's medical director. He says, "This building will allow us to bring resources to the patient instead of having to take the patient to the resource. Nearly everything a cancer patient needs will be under one roof."

Dr. H. Shelton Earp, director of Lineberger, says, "We envision the Cancer Hospital as becoming a hub that reaches out to doctors across the state. This building will enhance our ability to move fundamental research directly into patient applications."

"To maximize efficiency and create a decidedly patient-friendly atmosphere in the new building, teams of patients and hospital staff members were actively involved in the Cancer Hospital's design process," says Mary Beck, UNC Hospitals' senior vice president for system affiliations. Beck has been impressed with how the cohesiveness of the oncology staff has come to the fore during the project. Instead of jockeying for space individually, she says, the entire staff worked together to make the whole layout more seamless.

Also nearing completion is the Genetic Medicine Building, which has been under construction for more than three and a half years. At 331,000 square feet, it is the largest building on the UNC campus, soon to be home to the departments of Biochemistry, Pharmacology, and Genetics, plus several School of Pharmacy functions. In addition, this building houses an animal facility larger than a combination of all other such operations on campus, remedying a chronic shortage of animal research space at UNC.

The seven-story Genetic Medicine Building will house laboratories, classrooms and offices for both the School of Medicine and the School of Pharmacy. Two floors of the 331,000 square-foot building are underground.

Robert Marriott, Jr. the School of Medicine's associate dean for planning, management, and resources, is working on plans for an Imaging Research Building that he refers to as "the new largest building on the UNC campus." The 343,000-square-foot structure, to be built at a cost of $260 million (including equipment), will be devoted entirely to research labs and imaging research aimed at finding and treating the whole family

In August 2004, the state of North Carolina authorized $180 million in funding to construct the state-of-the-art NC Cancer Hospital. Construction began in October 2005, and the building will open in late 2009. The state's investment will substantially improve patient care for the citizens of North Carolina and, through the stimulation of cancer research, significantly improve the state's economy and position as a national leader in biotechnology. Photo by Edward Byrnes

of ailments related to cancer.

Imaging is an important part of the fight against cancer because early detection is so important. The Imaging Research Building will be attached to the Lineberger Comprehensive Cancer Center so that physicians and researchers can conveniently collaborate on cancer treatments. "We expect this facility to elevate UNC and the state of North Carolina into the sort of atmosphere MD Anderson and Sloan Kettering occupy in the field of cancer treatment," says Marriott.

The Imaging Research Building will be equipped with a cyclotron to make radioactive isotopes used in tracing tumors and other research. Marriott describes the cyclotron as "about the size of an office desk," but expensive medical equipment often comes in small packages. The cyclotron bears a $1.5 million price tag. Safety considerations require that the device be housed in a vault with four-feet-thick concrete walls at a cost of an additional $3.5 million. The cyclotron, Marriott adds, is just one feature—there will be about $40 million worth of state-of-the-art equipment in the building.

Obviously there's a limit to the amount of land available for expansion on the UNC Health Care and medical school campuses. One solution to the acreage shortage is to move clinical services off campus. For example, the Ambulatory Care Center (ACC), housed in a free-standing building a block south of the main hospital complex, sees more than 167,000 of the nearly 800,000 patients seen annually at UNC and has been operating at capacity for several years. To take pressure off the outpatient space on campus, Cardiac Care services have been moved to space in the Meadowmont residential and business community and Surgical Oncology and Otolaryngology further to the eastern outskirts of Chapel Hill. Dermatology and Rheumatology soon will be relocated into the community as well. These moves alleviate parking problems at the main campus while reducing access problems for patients, who are delighted to be able to park just a few steps from the clinics' front doors.

An artist's rendering depicts the new bed tower and patient entrance wing along Manning Drive.

In another off-campus development, design work is underway for a new Diagnostic Imaging and Spine Center to be constructed in eastern Chapel Hill on the corner of Highway 54 and Finley Golf Course Road. The project is scheduled for completion in 2010.

These brick-and-mortar improvements are crucial to the pursuit of excellence but many important, though less visible, changes are underway.

Near future

Looking further—eight to ten years—into the future, it's clear that the School of Medicine must graduate more physicians. In response, the venerable Berryhill Hall will be either drastically rebuilt or totally replaced. The result will be a large, ultramodern medical education facility that will allow an increase in enrollment capacity from the current 160 students to as many as 230.

Roper continues to emphasize statewide outreach and partnerships. "Our expansion should move beyond Chapel Hill. We would like to expand the medical school to Charlotte and Asheville in order to extend our reach and ability to train more doctors for all areas of the state. In addition, we are looking for partnerships with other organizations, like the Leo W Jenkins Cancer Center at East Carolina University, to partner on medical education and cancer care delivery."

Under these partnership plans, medical students would complete their basic science training at the Chapel Hill campus, then move to one of the other three universities for clinical training in concert with major hospitals in Charlotte, Asheville, and Greenville. By situating significant medical training centers in the mountains, the urban piedmont, and coastal plain, UNC School of Medicine officials hope to interest more young physicians in pursuing careers in areas of the state where health provider shortages are most severe. At the same time, the plan will enable expansion of medical student enrollment at the UNC-Chapel Hill campus.

North Carolina is a large state with a fast-growing, fast-aging population. UNC Health Systems' motto, "Leading, Teaching, Caring," isn't just another promotional slogan. It's the keystone that binds patients, teachers, students, caregivers, researchers, buildings, state-of-art equipment, and far-seeing administrators in a total effort providing better health and better living to the people of North Carolina and the world at large.

A Bit of Salt, A Trace of Life

Deep under the desert, Jack Griffith found something too old and almost too good to be true

In a tunnel 2,000 feet below the desert near Roswell, New Mexico, a lone beam of light from Jack Griffith's headlamp struck a thick wall of ancient salt. Griffith had no idea what was trapped inside this 250-million-year-old crystallized formation. Ancient fossils? Bacteria? Nothing? He didn't dream of finding an organic molecule that might help scientists find life on other planets. That sort of idea usually belongs above ground in Roswell, de facto home of ufology and alien conspiracy theories. But Griffith's science project turned out to be almost as surreal as Roswell, and a whole lot more provable than a UFO.

Jack Griffith, the Kenan Distinguished Professor of Microbiology and Immunology in the UNC School of Medicine and a professor of biochemistry, isn't known to traipse into the wild searching for odd and ancient matter. He is, though, something of a legend for his work photographing the tiniest of things with his electron microscope. He figured out a way to see the finer details of DNA, and he took the first photo of DNA bound to a known protein. Such work has helped biochemists analyze macromolecules of all shapes and sizes.

One such biochemist is Bonnie Baxter. Several years ago, she asked Griffith to photograph bacteria she had found in Great Salt Lake. He agreed, and while peering at Baxter's samples he saw surprisingly large amounts of bacterial viruses in the background.

"We didn't expect to see that," Griffith says. "Scientists had seen it in other salt environments but never in the Great Salt Lake. The viruses looked like ones that grow in people."

Curious but focused on his main research, Griffith had two high-school interns spend the summer studying the bacterial viruses. But Griffith's curiosity eventually got the best of him. He knew that really old halite formations exist around the world; what if bacteria and their viruses were trapped inside these ancient salt crystals?

Baxter sent Griffith salt crystals from an old mine in Utah, but he couldn't find many with inclusions, the pockets of water that might contain very old organic material. Geologists told him that surface water had continually leaked into that salt formation, redissolving the salt over and over and casting doubt on the age of anything encased in the crystals.

"That salt deposit was geologically trashed," Griffith

says. "So then it became a matter of, well, should we drop this, or should we get a little more serious?"

Griffith read up on ancient halite formations and found out that the most promising, undisturbed salt deposit lies 2,000 feet below the desert 30 miles southwest of Roswell.

Last summer, Griffith flew to El Paso, Texas, and drove 200 miles into the middle of the desert until he came upon an inconspicuous mining operation.

"Unless you knew what this was you'd drive right past," he says. "There are no signs. It has a very low profile, yes, except for all the security."

Turns out, this isn't salt mine. It's a dump for nuclear waste. Or, as the US Department of Energy (DOE) calls it, a Waste Isolation Pilot Plant. Either way, it's where the DOE buries transuranium waste from old nuclear warheads.

But Griffith says this is no pilot plant.

"There's almost an entire city cut into that gigantic salt deposit a half-mile underground."

In the 1990s, the DOE dug a mine shaft through 2,000 feet of rock to reach the Permian Salado Formation, a 250-million-year-old conglomeration of halite — crystallized sodium chloride, also known as salt. The Salado is 2,000 feet thick and extends for miles underground. Using a gigantic drill, the DOE has hollowed out miles of tunnels and dozens of rooms as big as football fields to store thousands of barrels full of nuclear waste. The 100-gallon barrels are stacked three high, wrapped tight, and then sealed behind a twelve-foot cement wall. Geologists say that over time, the salt will act like a glacier, slowly covering the barrels and encasing them permanently.

Griffith says that most geologists who have studied the Salado are confident the formation is too deep under rock to have ever been penetrated by surface water. This means that the Salado very likely had remained unperturbed for 250 million years, since the continents were clumped together in one landmass called Pangaea. When the continents began drifting apart, a large pool of oceanic salt water was trapped inland near the equator. The water eventually evaporated, leaving an enormous salt deposit that crystallized and was covered by sedimentary rock. That part of Pangaea is now southeastern New Mexico.

Most macromolecules are thought to degrade well before 250 million years have passed. DNA definitely isn't supposed to last that long. But few people have looked for it in such a strange place.

Griffith pulled up to the outer fence at the nuclear waste site, watching a conveyor belt dump tons of large salt crystals onto enormous trucks. There, he met geologist Dennis Powers, a DOE consultant and Salado formation expert who handed Griffith a hard hat with a headlamp. They stepped inside an elevator and whooshed down through 2,000 feet of darkness.

"Whether you'd like this depends on whether you're claustrophobic and like insects or not," Griffith says. The elevator let them off near the intake shaft that sucks in air—and bugs—from the surface.

"There's a colony of black widow spiders, thousands of them, just hanging out by the intake shaft waiting for insects to be blown into their nests," Griffith says. "We did our sampling elsewhere."

Powers and Griffith hopped on an electric-powered cart and navigated their way through the eerie caverns, passing the many rooms full of nuclear waste until they came upon a freshly cut wall of halite that glowed when lit. There they found a perfect chunk of salt that Powers chipped away at, searching for inclusions. He found a lot.

For two days Griffith and Powers, along with Bonnie Baxter and DOE physicist Roger Nelson, collected chunks of halite and stuffed them into Ziploc bags.

Jack Griffith and graduate student Smaranda Willcox in the lab
Photo courtesy of Jack Griffith

All told they hauled out more than 100 pounds of salt, packed the bags into black fiberglass camera cases, and FedExed the lot to Chapel Hill.

Back at his lab, Griffith and graduate student Smaranda Willcox searched for inclusions. They sterilized the surfaces of the crystals to kill any bacteria that might have contaminated them since they were removed from the Salado. Then, while peering through a regular microscope, Griffith and Willcox clamped a crystal to a drill press and, with a very fine needle, drilled into the salt until they reached the trapped water. Then they

used a glass microcapillary to remove the salt-saturated water.

"This was a complete nuisance," Griffith says. "And we didn't get much material."

They did this eighty times before Griffith found a way around. He whittled the crystals to their pristine cores before dissolving them in ultraclean water.

Using the bulk-dissolved crystals and the salt water recovered from the tiny inclusions, Griffith and Willcox prepared the samples for viewing in the simplest way possible, in order to avoid contamination. They applied a drop of the sample to a three-millimeter round copper screen coated with carbon, washed it with water, air dried it in a vacuum, and finally coated the sample with tungsten so that the microscope would contrast whatever was in the sample with the background.

Then Griffith and Willcox popped samples into the electron microscope and searched for the remnants of ancient life. It didn't take long to find something. And at first they weren't sure what it was, because they had never seen anything like it. Griffith searched through dozens of samples and saw this same strange substance. Then he found another substance he didn't expect. It was DNA. And it had to be 250 million years old.

But other scientists had found supposedly ancient organic matter, only to face questions about its true age. Is the DNA Griffith found truly ancient, or is it a modern contaminant of ancient samples?

Ever since scientists figured out how to study the tiniest of things, they've been trying to find remnants of the oldest life forms on Earth. They've dug up skull fragments of bears and Neanderthals from 100,000 years ago. They've tracked down dormant bacteria in ice glaciers that date back 750,000 years. And they've unearthed 11-million-year-old cellulose—the chief component of a plant's cell wall—in Canada's arctic forest.

Griffith says this work is pretty much accepted as fact within the scientific community. Other findings, though, are kind of murky. In the 1990s, for example, researchers found bacteria in amber—fossilized sap—that was between 25 million and 45 million years old. "That's the Jurassic Park stuff," Griffith says.

But Griffith and others say that such amber might not be the best stuff for this kind of test. The bacteria inside might not be very old. Also, scientists didn't find a colony of bacteria to study under a microscope. They put a sample from amber on a Petri dish coated with nutrients and hoped that this new environment would be conducive for a dormant bacterium to multiply.

"You do this a couple hundred times and see what happens," Griffith says. The colony is definitely not ancient, he says. It might have grown from something ancient. Or maybe not.

"This bacterium could've been something that floated in from your hair or anything else," he says. "You just don't know."

Last year, NC State researchers reported finding fragments of proteins from dinosaur eggshells dating back 68 million years. Griffith says their findings are certainly valid, but to detect ancient DNA, researchers normally rely on the polymerase chain reaction, or PCR, to amplify their samples. And PCR, like growing colonies on a plate, is an amplification method.

Jack Griffith stands in a cavern cut out of an ancient salt deposit two thousand feet below the New Mexico desert. Photo by Bonnie Baxter

"You do a PCR and out comes a test tube full of DNA," Griffith says. "But only one DNA molecule is needed to start that reaction. Does the PCR truly amplify something that was an ancient molecule, or something that was stuck to the tube?"

Griffith says PCR tests have a bad habit of amplifying present-day contaminants. The only thing an electron microscope amplifies is an image. Still, contamination could play a role.

Griffith did see DNA trapped inside ancient halite. And he thinks it's the remains of a 250-million-year-old organism, which would make it the oldest macromolecule ever found.

"This flies in the face of biochemical experiments that show that DNA probably shouldn't last that long,"

Griffith says. "But the high-salt environment of the Salado is probably quite protective to DNA."

He wrote his paper and sent it to journals, but the biochemists who reviewed it were skeptical because Griffith found only a trace amount of DNA.

"When you see things only occasionally with an electron microscope, you worry," Griffith says.

His lab is now using biochemical assays to confirm or disprove his findings. But he's confident he found ancient DNA, and one reason is that he found so much of that other strange substance. It looked a lot like cellulose, only no type he had ever seen.

"Modern cellulose is clumped together," he says. "This ancient stuff was untangled. We were tripping over it, there was so much."

Ann Matthysse, a professor of biology in the College of Arts and Sciences at UNC, helped Griffith figure out if it was really cellulose.

Griffith did see DNA trapped inside ancient halite. And he thinks it's the remains of a 250-million-year-old organism, which would make it the oldest macromolecule ever found.

Matthysse told Griffith to douse the ancient material in a mixture of sodium hydroxide and sodium borohydride at 65 degrees Celsius. This stuff will eat through leather, disintegrate insects, and burn away dead skin. But it won't harm cellulose, and nothing happened to Griffith's sample. Certain enzymes, Matthysse told him, will chew up a lot of things, but they won't harm cellulose. These enzymes didn't harm Griffith's sample either.

Then Matthysse told Griffith that a protein enzyme called cellulase chops up cellulose so it can be degraded. And that's what happened to Griffith's substance.

He snapped pictures with the high-resolution digital camera inside his electron microscope, and then he remembered that Malcolm Brown, a former UNC biologist now at the University of Texas, had taken some of the only photos of cellulose microfibers with an electron microscope.

"His photos looked very similar to ours," Griffith says

It's cellulose. Griffith has no doubt. And it's at least 250-million-years old, by far the oldest native macromolecule ever found. Griffith says that analyzing this cellulose may reveal more details about Earth's ancient biosphere.

It might even give us some clues about places other than Earth.

When Griffith sent his findings to journal editors, they gave the paper to geologists. The geologists not only questioned the likelihood of finding DNA in halite, but a few of them also wondered if the Permian Salado Formation is really that old and undisturbed.

Griffith rewrote the paper, adding nearly everything known about the Salado so that the geologists would be satisfied.

He also removed his findings about DNA and focused on proving the cellulose side of the story. The presence of ancient cellulose in Griffith's samples led him to an interesting conclusion: when scientists go seeking life on other planets, cellulose microfibers—not DNA—may be the best thing to look for.

He sent his paper to the journal *Astrobiology*, which published it in April 2008.

Griffith's theory, which he admits is a bit philosophical, is that life on other planets would likely be carbon-based. The six-carbon glucose molecule is the fundamental energy currency of most known carbon-based life forms, including the most primitive bacteria that existed 1.6 billion years ago, before there was an oxygen-rich atmosphere. Cyanobacteria are the modern-day descendents of those ancient primitive bacteria. And cyanobacteria create cellulose out of glucose molecules.

"It's very likely that any of the earliest life forms on other planets would learn how to stick these glucose units together to make this semi-crystalline five-nanometer cellulose microfiber," he says. "It's stiff and rigid, and very few things will break it down."

When cells die, cellulase enzymes typically are not around to break up cellulose. That means that cellulose won't degrade quickly, as Griffith's findings prove. And even if cellulase is present, it cannot completely digest the 36-glycan chain that makes up a cellulose microfiber. DNA and proteins, on the other hand, rapidly degrade when enzymes are released after cells die.

Cellulose microfibers exist in a semi-dehydrated state. This means that cellulose might cope better than other macromolecules with the dry conditions found on other planets in our solar system. Cellulose would

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Paso a paso:

Steps forward in **Latino health**

BY DIONNE BROOM

Marco Aleman, MD, clinical associate professor in UNC's Department of Medicine, looks at the Latino population in North Carolina and sees a health care time bomb.

The 2003-04 North Carolina Institute of Medicine report on Latino health concluded that, currently, Latinos are healthier than other North Carolinians and have fewer chronic diseases, primarily because they are a younger population—two-thirds of Latinos in the state are under 35. "But they are going to be aging without consistent access to health care, and aging with a genetic predisposition to the metabolic syndrome and a higher incidence of obesity, diabetes, and fatty liver disease," Aleman says. "It's an explosive mix."

Another dangerous component of the mix, he says, is cultural assimilation and the "fast food" diet of many low-income Latinos. "In this country, the poor are more obese than the rich because they don't have as much access to nutritious, healthy foods such as vegetables, fruit and fiber. They eat much more food that is highly processed because it is significantly less expensive."

Census realities

Aleman says it is important to note that the terms "Hispanic" and "Latino" are used interchangeably, but their meaning and origins are often vigorously debated. Though "Hispanic" points to Iberia and "Latino" suggests Latin America, Aleman, originally from Peru, says, "The population is diverse and heterogeneous. Taking into account the geography: Mesoamerica, the Caribbean, the Andes, and the "European cone" of South America; the existence of numerous indigenous groups; the stage of immigration; and the level of cultural assimilation—all of these factors and more add to the diversity of the Latino population."

Hispanics have become the nation's largest minority (15.1 percent, or 45.5 million), according to the 2008 US Census Bureau update. This trend is projected to continue; by 2050, approximately 25 percent (103 million) of the US population will be of Hispanic origin or Spanish-speaking. Currently, between 80 and 85 percent of the US Hispanic population has immigrated from Mesoamerica (Mexico and Central America).

The southeastern US has had the highest growth rate of the Latino population in the US over the past decade. From 1990-2000, growth rates were 300-400 percent in North Carolina, Arkansas, and Georgia. In central North Carolina, the Latino population ranges between five percent and 10 percent in the five-county region served by UNC. Hispanics here are more likely to be employed, but in hazardous or low paying jobs, while making significant contributions to the local and country-of-origin economies.

North Carolina doesn't have as many Latino residents as Florida, Texas, California, or some other large states. Latinos also don't make up as large a percentage of the population in North Carolina as in some parts of the country, particularly the Southwest; but the Latino population in North Carolina has been growing at a faster rate than almost anywhere else.

Between 1990 and 2000, the number of Latinos calling North Carolina home increased by nearly 400 percent. Latinos now make up about six percent of the state's overall population. In some counties, more than one in 10 residents is Latino.

As an astoundingly fast-growing segment of the population that is distinct in both culture and native language, Latinos present unique health care challenges. The most obvious of these is the difficulty that health care providers and their patients have in simply trying to communicate with each other.

According to a 2003 report on Latino health by the North Carolina Institute of Medicine, 34 percent of Latinos in the state spoke limited English and 50 percent had only a modest command of English. At the same time, relatively few physicians and other health care providers speak both English and Spanish.

The primary mission of the UNC Health Care System and the School of Medicine is to serve the people of North Carolina. Now that more and more of those people are Latinos, the School of Medicine and UNC Hospitals have responded with innovative initiatives designed to break down the barriers of language and culture that currently impede optimum health care.

Center for Latino Health

The UNC Center for Latino Health (CELAH) is being developed within the School of Medicine to provide clinical care specifically for Spanish-speaking patients, to promote and coordinate clinical research, and to train health care providers to serve this population. The startup of CELAH was funded by a grant from the School of Medicine's Investments for the Future (IFF) program. CELAH addresses each of the IFF program's goals: innovations for diverse populations, community partnerships, and support of the UNC Clinical and Translational Science Award. The hub of the new center is a multidisciplinary adult medicine clinic at UNC Hospitals that is opening this fall.

"We are promoting a Center of Excellence model and seeking synergistic partnerships on campus and in North Carolina," says Douglas Morgan, MD, MPH, assistant professor of medicine and director of CELAH. Morgan served as a Peace Corps engineer in Honduras and currently leads research initiatives in that country and Nicaragua. "Initially, we are focused on medicine specialties and family medicine, and hope to expand to other departments of the School of Medicine based upon the need. The census realities, Title VI mandates, and North Carolina Institute of Medicine summary oblige us to be proactive in Hispanic-Latino health."

The clinic operates in cooperation with Piedmont Health Services, a private non-profit organization that provides health care to people in central North Carolina through six community health centers. CELAH brings faculty providers together with a bilingual infrastructure and support staff. In its initial phase, the clinic staff includes Clinic Manager Claudia Rojas, Nurse Practitioner Liz Prata, Community Liaison Mayra McCarty, and Research Manager Paris Heidt.

"The US health care system can be very unforgiving to the uninsured and people with a low socioeconomic status, and that describes many Latinos, especially the ones who come to work in rural jobs or construction jobs," says Morgan. "Access to health care is a problem because they're not used to navigating the system, which is fairly complicated. Then you get the bills and have to deal with the insurance claims, and that can be very intimidating to people who have a significant language barrier."

Morgan says many Latinos don't have established relationships with primary care physicians, so they receive little or no preventive care and are more likely to go to a hospital emergency department when they are sick.

"That is much more costly and inefficient, of course, and we end up seeing them at later stages of disease," he says. "That is the price we all pay for not approaching health care for Latinos in a systematic way."

In addition to providing focused clinical care to Spanish-speaking patients, UNC's new bilingual clinic will foster teaching and research, according to Morgan, whose specialty is gastroenterology. Direct collaborations across the UNC Health Care campus are in progress, including the schools of nursing and pharmacy. The model provides a teaching infrastructure for one-month "bilingual rotations" for medical and nursing students, residents, and other trainees to improve their bilingual and multicultural competency.

Proyecto Puentes de Salud is a student-run organization that conducts health fairs in North Carolina and in Mexico, providing health education and screenings to countless individuals who would otherwise have little or no access to quality health care. Photo by Mauricio Salinas

Back row, left to right: Douglas Morgan, MD; Daniel Reuland, MD; Dr. Mauricio Cohen, MD. Front row, left to right: Elizabeth Prata, FNP; Mayra McCarty, PBA; Lisa Slatt, research associate professor; Claudia Chaparro-Rojas, Hispanic-Latino clinic manager; Dr. Marco Aleman, MD. Photo by Edward Byrnes

Another goal of the new center is to ensure that a representative percentage of Latinos is involved in clinical trials.

"Historically, Spanish-speakers have been excluded from many research protocols because of either real or perceived language barriers," Morgan says. "We are hoping that the new bilingual clinic will provide kind of an automatic entryway for folks to participate in clinical trials, as appropriate, if they would like to."

Spanish language enrichment

Four years ago, the School of Medicine began CAMPOS (Comprehensive Advanced Medical Program of Spanish) with the support of a grant from the Duke Endowment. CAMPOS is an enrichment program offered to first- and second-year medical students who have intermediate-level fluency in Spanish.

"The goal is to graduate more students who can independently provide linguistically and culturally competent care to North Carolina's expanding Latino population," explains Daniel Reuland, MD, MPH, who with Aleman co-directs CAMPOS.

Students in the CAMPOS program must perform 10 hours of service to the Latino community during each of their two years in the program. Many students fulfill their service requirement through El Proyecto Bienestar (The Wellbeing Project) in Siler City. They can help individual Spanish-speaking patients complete health risk assessments, conduct health history interviews and provide counseling on the results, or take part in health screening events in the community.

Morgan calls CAMPOS, which is now part of CELAH, "an innovative program that has positioned UNC to become a national leader in medical Spanish education and educational research."

Global health partnerships

Many of the School of Medicine faculty engaged in Latino health are actively involved with global health initiatives in service and research in Latin America. The School of Medicine is fortunate to work with six collaborative sites in Latin America. These include: Trujillo, Peru (Trujillo SOM; Drs. Aleman and Luis Diaz); Copan, Honduras (Western Regional Hospital; Dr. Morgan), León, Nicaragua (University of Nicaragua-UNAN; Drs. Morgan and Susan Hogan), and Intíbuca, Honduras (Shoulder to Shoulder NGO; Drs. Martha Carlough, Lisa Slatt, and Jeff Heck). Dynamic UNC medical student organizations established in Latin America include: Honduras Health Alliance (Choluteca, Honduras), Proyecto Puentes de Salud (Juventino Rosas, Mexico), and the Collaborative Sahsa Health Initiative (Mosquitia, Nicaragua, with UNAN).

These collaborations provide natural immersion, service, and research opportunities for students and residents. "CAMPOS students are strongly encouraged to do an immersion elective, after their first year, in a Spanish-speaking country," Reuland says. "They spend most of their time in clinical settings providing direct

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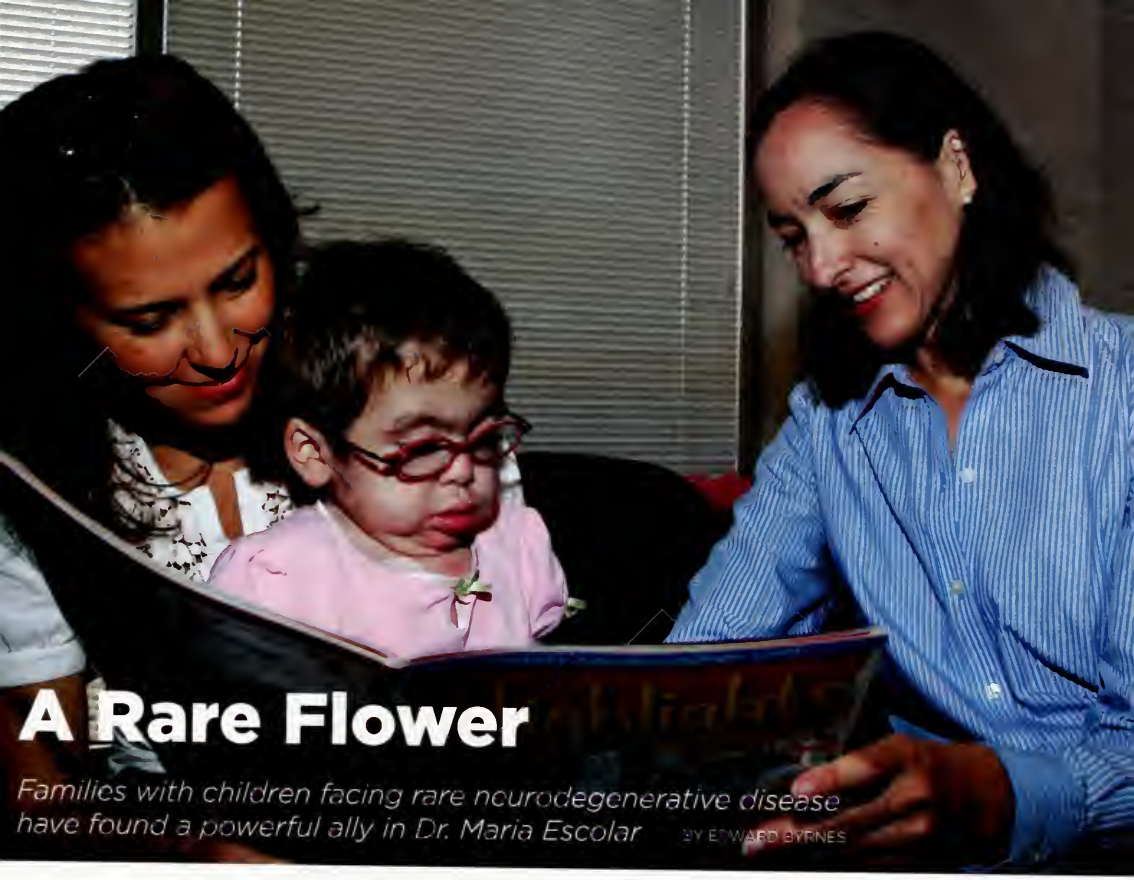

A Rare Flower

Families with children facing rare neurodegenerative disease have found a powerful ally in Dr. Maria Escolar

BY EDWARD BYRNES

Dr. Maria Escolar is not a collector, but her office is decorated with a mozaic of colorful artwork. Each piece that graces her walls is a one-of-a-kind original, created mostly in crayon, by a child. This art, which ranges from an exquisitely multicolored beetle to a piece of notebook paper on which is scrawled, "This is Dr. Escolar's Office," came from the fertile minds of her young patients—all of whom are, or were, unfortunate victims of some of the rarest diseases known to medicine.

Some of Escolar's patients, who would have died before their second birthday without treatment, are enjoying their 10th. And many families who have been touched by the care of Escolar and her Program for Neurodevelopmental Function in Rare Disorders (NFRD) go on to offer their assistance to other families who find themselves face-to-face with the reality of having a child with a life-threatening disease. Although it is heart-wrenching to deal with children who are very ill or dying and the family members who love them, Escolar finds her inspiration among them.

"These families are amazing. They have always been the ones that fuel me to keep on going," she says.

Escolar, a clinical associate professor in pediatrics at UNC and director of the NFRD at UNC's Clinical Center for the Study of Development and Learning (CDL), was working as a clinical associate in pediatrics at Duke University Medical Center in 1999 when she came across her first patient with a rare condition called Krabbe's disease.

Krabbe's disease belongs to a set of rare lysosomal storage diseases (LSDs) caused by a lack of or defect in enzymes that normally eliminate unwanted substances from the cells of the body. These enzymes are found in the lysosomes of each cell, which break down macromolecules into simpler compounds for elimination or reuse. The defect causes an abnormal accumulation of waste substances, inefficient functioning, and damage to the body's cells, which ultimately leads to serious

Above: Dr. Maria Escolar (right) reads with patient Caterina Marcus and her mother Claudina during a recent evaluation at UNC's Clinical Center for the Study of Development and Learning. Photo by [illegible]

health problems and in most cases, death. In addition to Krabbe's disease, the LSD family includes more than 40 other conditions, such as Hurler, Hunter's, and Sanfilippo's syndrome, metachromatic leukodystrophy, Tay-Sachs disease, and Sandhoff disease. All are neurodegenerative and fatal.

Escolar came to the US in 1986 from Bogotá, Colombia, after completing her medical degree at Escuela Colombiana de Medicina. She was at Duke, testing children who were receiving umbilical cord blood transplants in an effort to replace the missing enzymes. Her background in neurological development told her that the neurological systems of these children were already too damaged to be helped. They needed help sooner.

"I wanted to see the kids when they were younger and less symptomatic because I thought, with earlier treatment, their outcomes could be better," Escolar said. She began several small projects to evaluate children at younger ages; but to effectively evaluate and help these kids, Escolar knew she needed a multidisciplinary team.

"Duke wasn't interested in supporting that kind of effort; I think partly because they knew UNC already had a big center doing a lot of work in child development. So at that point, I thought I should go to UNC," Escolar said.

Although there weren't any job openings at UNC's CDL, Escolar made a proposal to its leadership: she would find funding for her project herself while getting patient referrals from Duke—all she needed was some clinic space. After some deliberations, they came to an arrangement in which Escolar would serve one day a week as a developmental pediatrician and help with the CDL's clinic in exchange for the clinic space she needed.

Escolar and patient Jaxon Cooper, who has Hunter's syndrome. The death of a sibling from the disease at age 14 prompted Jaxon's early testing and diagnosis as a newborn. Jaxon received a cord blood transplantation; and for the six years since then, Escolar and the NFRD has tracked his outcome and provided services that support his development and maximize his function both at school and at home. Escolar says Jaxon's success is an example of one of the basic concepts of her program: early intervention, newborn screening, and the importance of preventing neurological disease before injury occurs.
Photo courtesy of Maria Escolar

With patient referrals from Duke and a foundation grant, she established her Early Childhood Clinic at the CDL in 2000, which evolved into the NFRD program by 2002. The first goal of the clinic was to study rare autosomal recessive diseases to gain an understanding of their natural history.

"Most families who have a child with one of these diseases are very desperate because no one can tell them anything about the disease," Escolar said. "I knew that the only way we can begin to help is to be very systematic about the way we look at these diseases. We have to have a core dataset that will help us understand what the needs of these children are."

Escolar began collecting all the data she could on the rare diseases affecting the children she had been seeing. As word of her clinic spread, Escolar was soon getting referrals from across the country and around the world. She pulled together a multidisciplinary team from across UNC Health Care, including physicians with expertise in genetics, psychiatry, neurology, and other allied health professionals such as audiology and physical therapy.

Escolar's clinical research database grew quickly, so quickly in fact that she soon possessed the largest known database of clinical information on rare neurodegenerative diseases. The database now contains integrated information on 20 diseases and 450 patients from approximately 1,200 evaluations.

"When families now come to the NFRD, they get a multidisciplinary evaluation of their child so that when they leave, they do so with recommendations for everything from schooling and therapy to palliative medical care," Escolar says. "They get, in one to three

days, what other families may get in six months of going from one appointment to the next, with no one integrating the information along the way."

When the program began, Escolar and her colleagues put together a combination of tests to be used to gather information on patients' motor and cognitive skills that could be tracked longitudinally over time. Then, through administering different treatments, they could determine best practices for these patients.

Escolar and her colleagues published retrospective studies about what they had learned. Among many other things, they developed staging systems for the diseases to help clinicians determine the best course of action when they come across a patient with one of these conditions.

"If a clinician sees a child with one of these diseases, they can refer to our staging system and decide if their patient is a good candidate for transplant or if it's too late and they should work toward improving quality of life. It has helped many clinicians manage these diseases for their patients," Escolar said.

With this new information, many young patients and their parents are spared unnecessary worry, costly testing, and unnecessary treatments, Escolar says. As more and more health care providers become familiar with Escolar and the NFRD, she and her staff have begun to receive more and more phone calls regarding proper medications and other care related to the treatment and management of pediatric patients with these rare neurodegenerative diseases.

"We now have more experience with these diseases than just about any other place. There have been new discoveries in terms of treatments, such as recombinant enzymes, that can be used instead of or in addition to transplant. There are a lot of different things we can do clinically now that we couldn't do before. So, there was suddenly a need for clinical trials, and because we have such an extensive database on the natural history of these diseases, many companies became very interested in doing them with us," Escolar said.

The growth of Escolar's program has led other clinicians and researchers to seek her out for advice, information, and now, training. Escolar recently created a fellowship program for other physicians to come to UNC and train at the NFRD to ensure that the knowledge and information of the clinic will be spread elsewhere. So far, Escolar has trained two fellows. One, now an attending, continues to see patients at the clinic on a part-time basis, while the other has just begun her third year. Other requests for training fellowships have come from Italy, Canada, South America, British Columbia, and elsewhere.

Additionally, Escolar consults other health care professionals interested in setting up clinical information databases similar to hers. Escolar says that they accommodate these requests so that their model can be replicated in other places; and, as more and more treatment becomes available, it is important for researchers to be able to replicate studies in different populations. "This need for training is growing fast and is now an incredibly important part of what the NFRD does," she said.

Another area of growth for the NFRD is in imaging research. "Using MRI imaging technology, we're trying to correlate what happens in the brain with what manifests behaviorally. We might see signs that demyelination is occurring in the brain and the child may be OK. In another case we may see no signs of demyelination in the imaging and yet the child is very sick. So we're trying to figure out what the MRIs can tell us about function," Escolar said.

Escolar has begun collaborative imaging studies with the hope of finding ways in which imaging of the brain can inform treatment pre-emptively.

"We are going back and forth between behavioral phenotypes of a disease and the imaging; and, in collaboration with basic researchers with animal models, we can refer to their studies to try to figure out how treatments affect different areas of the brain and see how it affects development and timing of myelination," Escolar said.

With the addition of the training and imaging components, in addition to seeing patients and maintaining the database, Escolar's time is at a premium. Though she sees potential for further growth, the current size and structure of the NFRD is pretty close to what she had envisioned from the beginning.

"Where we are now is as big as I wanted [the NFRD] to get. But I can see how it could grow in a virtual way; this infrastructure is unique and I think a lot of other clinicians may want to benefit from it," said Escolar. "Other researchers may start collaborating with us—using the database to look at other diseases. Things like this could happen that don't require a lot of additional staff and funding, just the existing infrastructure. One of the fellows we train could begin more of these types of efforts here or in another part of the world. You never know."

Creating better doctors: The MD-MPH Program at UNC-Chapel Hill

BY DRS. RUSSELL HARRIS, LINDA KINSINGER, SUE TOLLESON-RINEHART, ANTHONY VIERA, AND GEORGETTE DENT

Although clinical medicine and public health were once intimately tied together, they have drifted apart in recent years. Physicians who are equally comfortable in clinical and community settings can: contribute to the control of the health problems that face us today; deal with the issues of quality of care, access to care, and cost of care; emphasize prevention; interpret and apply evidence appropriately; and work collaboratively with our public health colleagues.

Within the clinical system, such physicians will be leaders in organizing care to optimally meet the needs of panels of patients. Beyond the clinic, these physicians will work with others to address such issues as lifestyle change, environmental exposure, health literacy, health disparities, and international health.

Program development

In 1995, unofficial discussions began between faculty members of the UNC School of Public Health (SPH) and School of Medicine (SOM) who were concerned about the current MPH training for people with medical backgrounds (i.e., medical students, fellows, and faculty). These discussions were made easier because of the large number of faculty in the SOM with MPH degrees, many from the UNC SPH.

The group identified two primary problems: (1) clinicians pursuing MPH degrees (primarily fellows along with one to three medical students each year) often had different interests from those of many faculty in the SPH and (2) few medical students were taking advantage of the opportunity to get MPH degrees.

After a series of meetings, the group developed a plan for a new MPH, the Health Care and Prevention (HC&P) Program, tailored specifically for people coming to the population sciences from the clinical sciences. There was excellent support from both schools for this plan, and the HC&P Program admitted its first class of 18 students in the fall of 1997.

Today, the HC&P MPH program is a concentration within the Public Health Leadership Program (PHLP) of the SPH. This structure allows the HC&P MPH Program to take advantage of all SPH departments and to offer a broad, flexible program that can be tailored to the needs of its students.

The twofold mission of the HC&P program is to provide an educational program of the highest quality that has a focus on population and social sciences for medical students, residents, fellows, and others who have clinical science backgrounds and also to help students in the HC&P Program to integrate population and clinical sciences into a life course that will prepare them to contribute to improving the health of the public in a broader manner with a focus on the needs of populations as well as individual patients.

Curriculum

The HC&P MPH curriculum has been designed to provide a broad education in population health sciences to students who have a clinical background. It is planned to be maximally flexible and to encourage students to take charge of their own education. The curriculum is structured to be completed in 12 months, but students sometimes require a few additional months to complete the master's paper.

The HC&P curriculum's six closely integrated components are: the core courses, as required by the Council on Education for Public Health (CEPH), usually completed by the end of the fall semester;

Health Care & Prevention Program student Steve Parker spent summer 2008 working in Uganda, where he helped operate a neurosurgery clinic and treated children from a local orphanage. Parker is a Duke Global Health and Neurosurgery resident pursuing his MPH this year as part of his Global Health residency. Photo courtesy of Steve Parker

elective courses, usually taken in the spring semester; a practicum experience; an oral presentation; a comprehensive examination; and a master's paper.

Core and elective courses

To receive accreditation by the CEPH, an MPH program must provide instruction in five basic knowledge areas: biostatistics, epidemiology, health services administration, social and behavioral sciences, and environmental health sciences. Traditional introductory courses in each of these areas taken by UNC SPH students meet this requirement, but founders of the HC&P Program felt that it would be more attractive and successful if the required courses were made more relevant to clinicians' experience and interests. Four of the five required courses were redesigned specifically with clinicians in mind.

In addition to tailoring most of the required courses to meet the needs and interests of clinicians, several other courses have been developed with the MD-MPH student in mind. Most of the students take a two-semester course sequence that teaches how to critically appraise the health literature.

Practicum experience

Students usually complete their practicum experience in the first summer semester. In the practicum, the student works with a mentor to develop a set of learning objectives to be met in part by incorporating some sort of hands-on experience working on a public health problem. Some students have completed this requirement by working with a research team studying a population health problem or with a team doing an evaluation of a public health program. An increasing number of students are meeting the practicum requirement by working on an international project.

Meredith Niess worked with the Family Hygiene/Potable Water Project during her summer 2008 practicum experience in the Batey Central area of Barahona, Dominican Republic. Above, she (wearing the straw hat) visits with local families to determine how the recently installed biosand filters are operating and to hear about any problems the families may be experiencing with them.
Photo courtesy of Meredith Niess

including traveling to another country. One recent student traveled to India to learn about tuberculosis control in that country, and another examined child malnutrition in Haiti.

Oral presentation and comprehensive examination

Students are required to give a formal oral presentation before an audience and to receive feedback on the effectiveness of their communication. The purpose of the presentation is to improve the student's skills in oral communication, so the focus is not the content of the presentation as much as the delivery.

Students must also pass a comprehensive examination, usually taken after the end of the spring semester. The student has one day to complete answers to three questions from five areas (i.e., health policy, clinical epidemiology, prevention, critical appraisal, and public communication of health information).

Master's paper

Students commonly develop their master's paper topics by the beginning of the spring semester. Because the program is usually only 12 months in length, few students are able to collect primary data for a research article. Some students work with faculty in the SPH and/or SOM to perform a secondary analysis of previously collected data. Other students satisfy the master's paper requirement by conducting a systematic review of a

focused health question. Students may also conduct a policy analysis of an important public health issue or conduct an evaluation of a public health program.

Faculty

The HC&P Program has eight to 10 primary faculty who teach core courses. All of them have faculty appointments in both the SPH and the SOM. Another 10 to 12 faculty are very familiar with the program and serve as mentors for several students each year. Another group of faculty have a general understanding of the program and occasionally serve as mentors or readers. Finally, a larger group of faculty, primarily from the SOM, are asked to serve as mentors to students with a special interest in a particular area. These faculty often have little initial understanding of the program; core HC&P faculty provide an orientation to the program for them.

Students are encouraged to seek out and develop a strong relationship with at least one faculty member mentor with a background in the population sciences. One of the tacit goals of such mentorship is for the MD-MPH student to interact closely with someone whose work combines the clinical sciences with an understanding of the population sciences. In this way, students can get a better idea of how they can use what they are learning in the master's program.

Students

The backgrounds of the students in the HC&P Program have changed over the years of the program. At present, more than 20 percent of the 160 students in the UNC medical school class pursue an MPH at some time during medical school, primarily between their third and fourth years. Although some students choose to go elsewhere for their MPH, and some choose a departmental MPH at UNC SPH, the great majority of UNC medical students pursue their MPH within the HC&P Program.

Long-term strategies

How does one measure the success of programs such as the HC&P Program at UNC? Rigorous program evaluations of such curricula can be hard to execute, but it is important to devise ongoing measures of the program's likelihood of meeting its graduates' needs at the same time that it is seeking to create the kind of population health awareness and skills envisioned for the program. To this end, a survey attempts to ascertain students' goals and students' assessment of how their training has prepared them to reach those goals

This initial survey, now in the field, will be a baseline measurement in a longitudinal study of UNC medical student HC&P graduates and their career progression The study design involves at least three cross-sectional snapshots—in 2007–2008, 2012, and 2017—of HC&P graduates. In addition to these students, other UNC medical students in their graduating classes will be surveyed. At each five-year time interval, new students will be added to the cohort. The comparison of cross-sectional and longitudinal cohort studies will help us determine both "contextual change" (change that might arise from the graduates' reaction to a changing environment) and what social scientists call "life cycle change" (change that arises from movement through the life cycle and all that such change suggests for professional and intellectual maturation).

Conclusions and challenges

Although we can measure the program's substantial growth over the past decade, we do not have similar systematic data on the motivations of the increasing number of students entering the curriculum. Most medical students entering the HC&P Program seem to be doing so to prepare themselves to better serve the health of the public. Their interests are, increasingly, health care disparities, getting care to disadvantaged groups, changing the health care system, and international health.

Our vision is to train physicians to integrate population thinking with their clinical thinking. Our hope is that this will help develop physicians who will make a greater contribution to the health of the public. We realize that a single year of training is likely insufficient to change the direction of a physician's career. We further realize that the students who choose to pursue MPH degrees during medical school are already different from their peers. It is uncertain what additional contribution programs such as ours provide. This issue is worth studying, and we plan to do so.

The University of North Carolina has made a substantial effort to provide a more in-depth educational experience in the population sciences to complement the traditional medical curriculum. Our hope is that it will lead, over time, to a new and more population-minded physician who can make a greater contribution to the health of the public.

This article was adapted from "The MD-MPH Program at the University of North Carolina" which appeared in the April 2008 issue of Academic Medicine *Used with permission from* Academic Medicine

UNC earns Clinical and Translational Science Award

Last May, UNC became one of 14 institutions nationwide to earn a Clinical and Translational Science Award (CTSA) from the National Institutes of Health (NIH). UNC and Duke University are the only institutions in North Carolina to earn CTSA recognition. These 14 academic health centers join 24 others announced in 2006 and 2007. Total funding for these new awards is $533 million over five years. The 2008 CTSA grants expand state representation in the consortium to Alabama, Colorado, Indiana, Massachusetts, and Utah. They also support pediatric research at 13 dedicated children's hospitals; expand research in genetics and genomics; enhance research in behavioral immunology and infection risk; and increase outreach into local communities.

The $61 million award will help fund the North Carolina Translational and Clinical Sciences (TraCS) Institute, which will transform the way research is performed in our state by partnering with communities to more rapidly and efficiently "translate" scientific discoveries into improvements in the health of citizens.

UNC solicited input from over 300 faculty, administrators, and other stakeholders, from the university and across the state, to establish the TraCS Institute in January 2007. The TraCS Institute has three simple goals: prepare and empower faculty, health care providers, and citizens to participate in all aspects of the process involved in translating good ideas into health advances; provide the advice and resources necessary to design and execute the best research projects; and see that the best discoveries and ideas evolving from these projects are rapidly used to solve important health problems in the state. The Translational Research Advisory Board, consisting of senior faculty from across the UNC System, will partner with communities to identify and prioritize important health issues and will call for project proposals that address these priorities. The TraCS study section, which includes community members, will prioritize and help improve project proposals contributed by over 40 units across campus and the state. A special TraCS program will make sure the best ideas that result from these projects are implemented throughout the state to improve the health of citizens.

The North Carolina Translational and Clinical Sciences (TraCS) Institute at UNC-Chapel Hill.

Funded through CTSAs, the NIH supports a national consortium of medical research institutions working together to improve the way biomedical research is conducted across the country. The consortium shares a common vision to reduce the time it takes for laboratory discoveries to become treatments for patients, and to engage communities in clinical research efforts. It is also fulfilling the critical need to train the next generation of clinical researchers. The consortium is led by the National Center for Research Resources (NCRR), a part of the NIH. The CTSA initiative grew out of the NIH commitment to re-engineer the clinical research enterprise, one of the key objectives of the NIH Roadmap for Medical Research. Most of the funding will come from terminating grants to General Clinical Research Centers, supplemented by NIH Roadmap funds. In 2012, when the program is fully implemented, approximately 60 CTSAs will be connected with an annual budget of $500 million.

Study points to genetic causes of schizophrenia

Even though scientific evidence has long hinted that schizophrenia has a genetic basis, no study has definitively proven that this is the case. Now researchers at UNC, as part of an international team, have developed the first hard lead into the genetic causes of schizophrenia.

The study—the largest of its kind—identified genetic variants that can increase the risk of developing the disease as much as 21-fold. It also showed that schizophrenia patients are much more likely than normal individuals to have a large number of genetic variants distributed throughout their genomes.

These findings, published online recently in the journal *Nature*, give researchers a starting point to investigate the underlying biology of the disease. The research also provides hope for people affected by schizophrenia—showing that there is a reason for their illness and that new treatments may be within reach.

"My hope is that by recognizing the genetic causes of schizophrenia, we may begin to see a shift in how our society perceives the mentally ill," said study co-author Patrick F. Sullivan, MD, Ray M. Hayworth and Family Distinguished Professor of Psychiatry in the Department of Genetics at the UNC School of Medicine.

Schizophrenia is a chronic and often devastating brain disease that affects one person in every 100 in the course of their lives. Scientists believe that schizophrenia has many causes—some genetic, some environmental. Despite the many scientific investigations into the topic, little has been learned about the genetics of the disease.

Advances in technology have made it possible to examine genetic variation at a level that was never before possible. In this study, the researchers were interested in a form of genetic variation that relates to the number of specific genes each of us carries in our DNA. People usually have two copies of each gene, one inherited from a father and the other from a mother.

But recently, researchers discovered that healthy people can occasionally have fewer, or more, than two copies of a gene. A person might have three copies at one spot in his genome,

sixteen at another spot, or one at another.

"Every person has their own set of copy number variants, Sullivan said. "Most of these variants are innocuous, but a few can cause disease."

UNC, Caltech research finds further evidence for genetic contribution to autism

Some parents of children with autism evaluate facial expressions differently than the rest of us—and in a way that is strikingly similar to autistic patients themselves, according to new research by psychiatrist Joseph Piven, MD, of UNC and neuroscientist Ralph Adolphs, PhD, of the California Institute of Technology.

Piven, Adolphs and colleague Michael Spezio, PhD, formerly of Caltech but now at Scripps College in Claremont, Calif., collaborated to study 42 parents of children with autism, a complex developmental disability that affects an individual's ability to interact socially and communicate with others. Based on psychological testing, 15 of the parents were classified as being socially aloof.

"This manifests as a tendency not to prefer interactions with others, not to enjoy 'small talk' for the sake of the social experience and to have few close friendships involving sharing and mutual support," said Piven, senior author of the study, Sarah Graham Kenan professor of psychiatry in the UNC School of Medicine and director of the newly established Carolina Institute for Developmental Disabilities. "This characteristic is really a variation of normal and not associated with any functional impairment."

The parents participated in an experiment that measured how they make use of the face to judge emotions. The subjects were shown images depicting facial expressions of emotion that were digitally filtered so that only certain regions of the face were discernible—the left eye, for example, or the mouth. The subjects were then asked to decide as quickly as possible if the emotion depicted was "happy" or "fear." The part of the face shown and the size of the revealed area randomly varied from trial to trial.

An analysis of the subjects' correct responses revealed that "aloof" parents relied much more heavily on the mouth to recognize emotion than they did on the eyes, as compared to non-aloof parents and, to a greater extent, to a group of parents of children without autism. Prior studies by Adolphs and his colleagues have shown that humans normally evaluate emotions by looking at the eyes—but studies by Adolphs and Piven have shown that individuals with autism do not.

"We found that some parents who have a child with autism process face information in a subtly but clearly different way from other parents," Adolphs said. "This is evidence for the hypothesis that the parents with the autistic child have brains that function somewhat differently as well."

The researchers noted that an important part of the paper is that it is not claiming all people with autism—or their parents—are 'impaired. Instead, they said the study shows that parents who have children with autism—like the autistic subjects themselves—are different and do things differently.

The paper, "Selective face processing abnormalities in parents of autistic children," was published in the July issue of the journal *Current Biology*. The research was funded by grants from the National Institutes of Health and the Simons Foundation.

UNC study ties ending moderate drinking to depression

Scientific evidence has long suggested that moderate drinking offers some protection against heart disease, certain types of stroke and some forms of cancer.

But new research shows that stopping drinking—including at moderate levels—may lead to health problems including depression and a reduced capacity of the brain to produce new neurons, a process called neurogenesis.

The findings from the Bowles Center for Alcohol Studies at UNC appear online in the journal *Neuropsychopharmacology*.

"Our research in an animal model establishes a causal link between abstinence from alcohol drinking and depression," said study senior author Clyde W. Hodge, PhD, professor of psychiatry and pharmacology in the UNC School of Medicine. "In mice that voluntarily drank alcohol for 28 days, depression-like behavior was evident 14 days after termination of alcohol drinking. This suggests that people who stop drinking may experience negative mood states days or weeks after the alcohol has cleared their systems. This research provides the first evidence that long-term abstinence from moderate alcohol drinking—rather than drinking per se—leads to a negative mood state, depression," Hodge said.

But the study also found that treatment with an antidepressant drug during 14 days of abstinence prevented the development of depression and restored the capability of the brain to produce new cells.

"Treatment with antidepressant drugs may help people who suffer from both alcoholism and depression by restoring the brain's ability to form new neurons," Hodge said. "Moreover, this research provides an animal model of alcohol-related depression with which we can begin to fully understand the neurobiology underlying co-occurring alcoholism and depression, and thereby develop successful treatment options. At this point it appears that blunted neurogenesis may underlie the effects of abstinence from alcohol drinking on mood, but understanding the mechanisms by which this occurs is a key challenge for future research."

Several co-authors, all from UNC, also contributed Jennie R. Stevenson, neurobiology graduate student, Jason P. Schroeder, PhD, and Kimberly Nixon, PhD, research associates with the Bowles Center; Joyce Besheer, PhD, assistant professor of psychiatry, and Fulton T. Crews, PhD, director of the Bowles Center and professor of psychiatry and pharmacology

The research was supported by grants from the National Institute on Alcohol Abuse and Alcoholism (a component of the National Institutes of Health) and by the Bowles Center for Alcohol Studies

Study provides clues to preventing, treating cancer spread

Why is it that certain cancers prefer to spread, or metastasize, to certain places? Prostate cancer usually moves to bone; colon cancer, to the liver. To answer these questions, Dr. Hendrik van Deventer, assistant professor of medicine at UNC and a member of the UNC Lineberger Comprehensive Cancer Center, turned to a century-old theory of cancer spread. English surgeon Stephen Paget's "seed and soil."

The idea is that the spread of cancer isn't just about the tumor itself (the seed), but also the environment where it grows (the soil). Other scientists have shown that cells from bone marrow can migrate and change the environment so that it is receptive to incoming cancer cells. These cells do so by forming small neighborhoods or niches within distant organs. Thus, biologists refer to these areas as "premetastatic niches."

Van Deventer and his colleagues wanted to know what non-tumor cell could change a normal organ so cancer cells would invade. If scientists could discover the identity of that normal cell, maybe they could devise treatments to stop metastases.

In a study published in the July issue of *The American Journal of Pathology*, van Deventer showed for the first time that that cell could be a fibrocyte—cells that travel around the body, rushing to the site of an injury to aid in healing when needed. Once there, they produce changes that are good for wounds. Unfortunately, these same changes can help cancers grow. It is not yet clear if fibrocytes are causing these problems in cancer patients. However, "there is some clinical data that suggests that these cells are increased in patients with metastatic cancer," he said.

The experiment also showed that injection of these cells induced MMP9, an enzyme that is known to promote cancer. The researchers considered this good news, since drugs are available that block MMP enzymes and have proven beneficial in treating cancer. The study also suggests ways to develop treatments to prevent metastases using already available medications.

Still, many basic questions remain to be answered. How do cancers promote the formation of the premetastatic niche? Are some patients at higher risk for metastasis because their environment changes their fibrocytes? "These are daunting questions, but ones that would have pleased Dr. Paget," van Deventer said. "This paper gives us a place to start looking for the answers."

Other authors of the study, all from UNC Lineberger, are research specialist Qing Ping Wu; professional fellow Daniel T. Bergstralh, PhD, research associate Beckley K. Davis, PhD; postdoctoral fellow Brian P. O'Connor, PhD; Distinguished Professor of Microbiology and Immunology Jenny P.Y. Ting, PhD, and Distinguished Associate Professor of Medicine and of microbiology and immunology Jonathan S. Serody, MD, PhD. The study was funded by the National Cancer Institute, part of the National Institutes of Health.

Oral contraceptives may ease suffering of women with severe PMS; UNC study tests new regimen for treatment

A new clinical trial at UNC using a popular low-dose contraceptive could uncover a more effective treatment for the five to 10 percent of women who suffer from premenstrual dysphoric disorder (PMDD).

PMDD is much more severe than premenstrual syndrome, or PMS. The disorder interferes with a woman's ability to function effectively several days out of each month, every month. Physical symptoms include bloating, low energy, heart palpitations and joint or muscle pain. Far more disruptive emotional symptoms include irritability, anxiety, depression, mood swings, difficulty focusing, and trouble sleeping. For many women with PMDD, five or more of these symptoms occur the week before menstruation starts and disappear a few days after the period begins.

The National Institute of Mental Health awarded UNC a $3 million grant for a five-year clinical trial using a low-dose contraceptive called YAZ (ethinyl estradiol/drospirenone). There are no other studies of continuous administration of birth control pills, so the ability of this study to identify the role of neurosteroids like allopregnanolone (a metabolite of progesterone) in PMDD is unique.

"This study will potentially demonstrate that it is the regimen of administration of birth control pills rather than their specific formulation that results in successful treatment of PMDD," said Dr. David Rubinow, the Asad Meymandi, MD, Distinguished Professor and chair of psychiatry at UNC. The trial is based on his previous research that discovered it is the change in reproductive hormones that triggers depression in women who are susceptible to PMDD.

In other words, women with PMDD don't have abnormal levels of reproductive hormones, but are more sensitive to the shifts in them that occur prior to menstruation. That sensitivity triggers mood symptoms.

"If we can eliminate the hormone cycling, we should eliminate the PMDD symptoms," explained Susan Girdler, PhD, professor of psychiatry. She and Rubinow are co-principal investigators of the trial.

Psychosocial issues affect HIV/AIDS treatment outcomes

Psychosocial influences such as stress, depression and trauma have been neglected in biomedical and treatment studies involving HIV-infected persons, yet those influences are now known to have significant health impact on these individuals and the spread of AIDS, according to a UNC School of Medicine scientist.

Now, a comprehensive update on those influences in the June issue of *Psychosomatic Medicine* offers a wake-up call and should give infectious disease physicians and other healthcare practitioners working with HIV-infected persons information to improve patient outcomes, said Jane Leserman,

PhD, sociologist and professor of psychiatry and co-editor of the special journal issue subtitled "Psychosocial Influences in HIV/AIDS: Biobehavioral Mechanisms, Interventions, and Clinical Implications."

"A huge amount of research has been done in our field around these psychosocial influences, yet we felt not all medical professionals working with HIV-infected persons were aware of this body of knowledge," Leserman said. "Our goal was to publish a comprehensive—yet succinct—review of the important biobehavior research and its impact on patient care.

"We hope this special issue will serve as a catalyst for healthcare providers to address these problems as part of standard HIV care, and to stimulate collaborations between biomedical and biobehavioral clinicians and researchers working as a team to address the quantity and quality of life for these patients."

Psychosomatic Medicine is the journal of the American Psychosomatic Society. The contents of this special issue are available as an open-access document, free-of-charge to all interested parties at www.psychosomaticmedicine.org.

Adult stem cells aid fracture healing; UNC study lays groundwork for potential treatments

In an approach that could become a new treatment for the 10 to 20 percent of people whose broken bones fail to heal, researchers at UNC have shown that transplantation of adult stem cells can improve healing of fractures.

Researchers have used adult stem cells in a few cases to improve fracture healing, but further study was needed to show that this method was truly effective and safe before it can be pursued as a new treatment. Now UNC scientists have provided the scientific foundation for future clinical trials of this approach by demonstrating in animal models that these cells can be used to repair broken bones.

"This finding is critical to patients who lack the proper healing process and to individuals prone to broken bones, such as those with osteoporosis and the rare genetic condition known as brittle bone disease," said Dr. Anna Spagnoli, associate professor of pediatrics and biomedical engineering in the UNC School of Medicine and senior author on the study.

The study, presented in June at the annual Endocrine Society meeting in San Francisco by the first author, Froilan Granero-Molto, PhD, post-doctoral associate researcher in UNC's pediatrics department, is the first to visualize the action of transplanted adult stem cells as they mend fractures in mice.

During normal fracture healing, stem cells form the cartilage and bone needed to fuse the broken bones back together. But in more than 600,000 Americans a year, this process does not occur as it should. The result can be long periods of immobilization, pain, bone deformities and even death. Current therapies, such as multiple surgeries with bone autografts and artificial prosthetic materials, often are not enough to cure these patients.

Kicking stem cells into repair mode is one of the objectives of a new branch of medicine called regenerative medicine. Stem cells in human bone marrow—called mesenchymal stem cells—can turn into bone, cartilage, fat, muscle and blood vessel cells.

"The beauty of regenerative medicine is that we are helping the body improve its innate ability to regenerate healthy tissue on its own, rather than introducing man-made materials to try to patch up a broken bone," Spagnoli said.

If scientists can duplicate the results of their animal study in humans, it may lead to a new treatment for the millions of people who suffer fractures that do not heal properly, Spagnoli said. Once a physician determines that the bone has not healed, they could obtain adult stem cells from the person's bone marrow in a minimally invasive procedure and transplant them at the same time the patient is receiving a bone graft.

Other co-authors of the study include Dr. Lara Longobardi, UNC assistant professor of pediatrics, along with the following researchers from Vanderbilt University: Dr. Michael Miga, assistant professor of biomedical engineering, Dr. Jared A. Weis, postgraduate fellow in biomedical engineering, Benjamin Landis, medical student, and Lynda O'Rear, research specialist. Funding for the study came from the National Institutes of Health.

$19.9 million federal grant to UNC stroke prevention study

The UNC School of Medicine has been awarded a $19.9 million five-year federal grant for a national clinical trial to determine if brain bypass surgery can prevent stroke.

The Carotid Occlusion Surgery Study is headed by Dr. William J. Powers, the H. Houston Merritt Distinguished Professor and chair of neurology at UNC.

Sponsored by the National Institute for Neurological Disorders and Stroke, the multi-center study will determine if a branch of an artery that supplies blood to the scalp can be used to bypass blockages of a major neck artery that supplies blood to the brain.

The study is enrolling patients at 41 medical centers in the US and Canada.

UCRF Web site launched

A Web site for the University Cancer Research Fund was recently launched to provide access to news, publications, outreach activities, and other items related to the UCRF. The Web site can be accessed at ucrf.unc.edu.

The Web site also features a page where users can submit comments online about the UCRF. Access the page at http://ucrf.unc.edu/listening/survey.asp to submit your thoughts about the UCRF.

The University Cancer Research Fund was established at UNC last year by the NC legislature. With funding starting at $25 million in 2007 and expected to grow to $50 million a year by 2009, the UCRF has provided UNC with significant resources to address North Carolina's growing cancer problem.

NC Children's Hospital ranked in nation's top 10 for children with respiratory disorders

US News and World Report has recognized North Carolina Children's Hospital as seventh in the nation among the Top 30 children's hospitals caring for children with respiratory disorders. The ranking appears in the magazine's 2008 edition of America's Best Children's Hospitals, available online at www.usnews.com/pediatrics.

"We are proud and honored to be ranked by US News and World Report," said Alan Stiles, MD, physician-in-chief of North Carolina Children's Hospital. "We've long recognized ourselves as one of the country's best children's hospitals, and I firmly believe this distinction is reflective of our faculty and clinical staff's tireless dedication and commitment to our three-tiered mission of patient care, research and education."

This year marks the first time that the magazine has extended its pediatric rankings beyond the top 30 pediatric centers overall. The 2008 America's Best Children's Hospitals list now includes the 30 top-ranked hospitals in cancer, digestive disorders, heart and heart surgery, neonatal care, neurology and neurosurgery, respiratory disorders, and general pediatrics.

"Very sick kids need very special care," said Senior Writer Avery Comarow, who has been editor of the America's Best Hospitals and America's Best Children's Hospitals annual rankings since their inception. "The best places for them are pediatric facilities with a deep pool of expertise in their particular illness. Breaking out key specialties is crucial to help parents and other caregivers find these facilities."

NC Children's Hospital's seventh place ranking is the highest achieved by any children's hospital in North Carolina. In fact, NC Children's Hospital and Duke Children's Hospital are the only two children's hospitals in the entire state to be recognized in the 2008 edition of America's Best Children's Hospitals.

The specialty rankings of this year's America's Best Children's Hospitals were based on a new and improved methodology that weighed a three-part blend of reputation, outcome, and care-related measures such as nursing care, advanced technology, credentialing, and other factors. A detailed description of the methodology can be found online at www.usnews.com/pediatrics.

NC Children's Hospital's placement on the 2008 America's Best Children's Hospitals further distinguishes UNC Hospitals, which has been included in US News & World Report's America's Best Hospitals issue rankings for each of the last 15 years.

Five specialties at UNC Hospitals ranked among nation's best by US News & World Report

Five medical specialties offered at the University of North Carolina Hospitals rank among the top 50 programs of their kind nationwide in US News's 2008 publication of America's Best Hospitals, published in July.

The 2008 America's Best Hospitals guide ranks 170 medical centers nationwide in 16 specialties—with full data available online for another 1,500 that are unranked.

"This is the 16th year in a row that multiple specialties at UNC Hospitals have been included in America's Best Hospitals," said Dr. William L. Roper, dean of the UNC School of Medicine and chief executive officer of the UNC Health Care System. "Our inclusion in these rankings is a testament to the excellent quality and longstanding consistency of care offered at UNC Hospitals."

The magazine unveiled the rankings in July for its 19th annual "America's Best Hospitals" issue. What follows are brief descriptions of each of UNC's ranked programs.

Cancer (ranked 38th): Cancer care at UNC is coordinated through the UNC Lineberger Comprehensive Cancer Center by Dr. Richard Goldberg, physician-in-chief of the North Carolina Cancer Hospital, and Lineberger associate director. The Center, established in 1975, is headed by Dr. Shelton Earp, director, and is one of only 41 National Cancer Institute (NCI)-designated comprehensive cancer centers. UNC Lineberger holds two Specialized Program of Research Excellence (SPORE) grants, one of 11 in the US for breast cancer and one of five in the US for GI cancers.

Ear, Nose & Throat (ranked 42nd): The Department of Otolaryngology/Head and Neck Surgery, headed by Dr. Harold C. Pillsbury III, has a long history of excellence dating back to the opening of NC Memorial Hospital in 1952. In recent years the department has become known as a leader in cochlear implant surgery, which enables many deaf people to regain a functional level of hearing.

Gastrointestinal Disorders (ranked 35th): UNC's Division of Gastroenterology and Hepatology is headed by Dr. Robert Sandler, who is the current president of the American Gastroenterological Association (AGA Institute). The division provides highly specialized, compassionate care for patients

with gastrointestinal, liver and nutritional diseases. The division is a national leader in research initiatives that further our understanding of complex disease processes and lead to innovative therapeutics.

Gynecology (ranked 33rd): Gynecology services at UNC Hospitals are housed in the Department of Obstetrics and Gynecology, headed by Dr. Daniel Clarke-Pearson. The department is known as a leader in areas such as advanced laparoscopy and gynecologic surgery, treatment of gynecologic cancers and maternal-fetal medicine.

Kidney Disease (ranked 25th): Patients with kidney problems receive excellent care through UNC's Division of Nephrology and Hypertension, headed by Dr. Ronald Falk. Care for kidney patients is provided in seven outpatient clinics, plus UNC Hospitals' kidney and kidney transplant wards and community-based dialysis units in Burlington, Carrboro, Sanford, Siler City, Yanceyville and Pittsboro.

UNC performs second US implant of new hearing device

On March 28, surgeons at UNC Hospitals performed the second implantation in the US of the Vibrant Soundbridge (VSB) device as a treatment for conductive and mixed hearing loss using direct round window cochlear stimulation.

The Vibrant Soundbridge is the first US Food and Drug Administration (FDA) approved implantable middle ear hearing device to treat sensorineural hearing loss. Adults with conductive or mixed hearing loss who have been unsuccessful with traditional amplification may be helped by this device.

The surgery was performed by Drs. Craig Buchman and Oliver Adunka, both from the Department of Otolaryngology-Head & Neck Surgery in the UNC School of Medicine.

"The Vibrant Soundbridge device should provide a solution for a subset of patients that previously had few good options for improving their hearing. Those individuals with hearing loss resulting from hearing bone or ear canal disease now have the opportunity for restoration of normal hearing without the need for a conventional hearing aid," Buchman said.

"The potential benefits are substantial in that the device might eliminate problems with ear canal occlusion, infections, and feedback which are common among certain hearing aid users," Adunka said.

The patient who received the surgery recovered at home until May 22, when he returned to UNC Hospitals to have the implant activated and its settings adjusted by an audiologist.

The Vibrant Soundbridge is marketed by MED-EL, which has its US headquarters in Durham, NC. The device is currently indicated for use in adults who have moderate-to-severe sensorineural hearing loss and who cannot achieve success or adequate benefit from hearing aids or cannot medically tolerate hearing aids. Although the Vibrant Soundbridge is a newly approved device in the US, it has already been used in thousands of patients in Europe.

The Vibrant Soundbridge utilizes hearing technology that directly drives the ossicular chain (middle ear bones) or other middle ear structures, bypassing the ear canal and tympanic membrane (eardrum). It consists of two major components: 1) the implanted component, called the Vibrating Ossicular Prosthesis (VORP), and 2) the externally-worn receiver, called the Audio Processor (AP), which is approximately the size of a quarter. Unlike a hearing aid, which simply amplifies sound, the Soundbridge is a direct drive prosthetic, which mechanically vibrates structures in the middle ear.

Implantation of the Soundbridge bears the same surgical risk as any middle ear surgery. The surgical procedure is very similar to that of the approved Vibrant Soundbridge indication and also that of the approved MED-EL Cochlear Implant. It is possible that placement of the device may need to be revised if the optimum outcome is not obtained or if the device migrates from the original position. Trauma to the inner ear during surgery may result in decreased residual hearing.

UNC Health Care is first in Carolinas to offer 'GPS for the Body' treatment

UNC Health Care is the first medical center in the Carolinas to begin treating cancer patients with a new system that tracks movement of the prostate to provide safer, more accurate radiation therapy.

The system, called the Calypso 4D Localization System, uses three tiny electromagnetic transponders—each about the size of a seed or a grain of rice—implanted in the prostate. These transponders send out signals that are used to track movement of the gland in real time, much like a global positioning or GPS system in an automobile tracks the vehicle's movement. For that reason, the manufacturer of the Calypso system also calls it "GPS for the Body."

In addition to the transponders, the Calypso system includes a console the size of a large rolling suitcase, an electromagnetic array to receive the transponder signals, a tracking workstation and infrared cameras installed in the treatment room.

"Many things can cause the prostate to move during radiation therapy," said Dr. Joel Tepper, a UNC Health Care radiation oncologist and member of the UNC Lineberger Comprehensive Cancer Center. "For example, if the patient makes small motions during treatment, or if the body changes internally due to bowel or bladder activity, the prostate can move enough to introduce errors in the precise radiation targeting. This movement makes it difficult to keep the radiation beam focused on the tumor and to avoid irradiating surrounding healthy tissue that should not receive radiation.

"We believe the Calypso system will make a real difference in patient outcomes by delivering radiation only where it is needed and thus reducing the side effects that are associated with radiation therapy, as well as assuring that the tumor receives the full radiation dose to maximize the chance of curing the tumor."

Tepper said.

UNC Health Care's first patient to be treated with the Calypso began his course of radiation therapy in early May.

UNC School of Medicine establishes Carolina Institute for Developmental Disabilities

The University of North Carolina at Chapel Hill School of Medicine has established a new institute to advance research, training and treatment efforts aimed at aiding children and adults with developmental disabilities.

The new Carolina Institute for Developmental Disabilities (CIDD) brings together four existing programs on the UNC campus—the TEACCH Program (Treatment and Education for Autistic and Related Communication Handicapped Children); the Clinical Center for Development and Learning; the Family Support Network of North Carolina; and the Neurodevelopmental Disorders Research Center.

"I believe the formation of the Carolina Institute will substantially raise our ability to provide state-of-the-art treatment to individuals with developmental disabilities, conduct cutting-edge clinical and research training, and position UNC as one of the premier research programs in the country in the area of developmental disabilities," said the institute's founding director, Dr. Joseph Piven, Sarah Graham Kenan Professor of Psychiatry and Pediatrics in the School of Medicine and in the College of Arts and Sciences' psychology department.

The new institute will be one of the largest programs for developmental disabilities in the country and UNC's primary source for treatment, education and research in this field. Partnerships with organizations across the state to promote and develop education and treatment programs will be an integral part of the institute's mission. The institute will also provide important, state-of-the-art resources aimed at supporting North Carolinians with developmental disabilities and their families, and will promote research on the causes, development, effects and treatment of these conditions.

Visit the institute's new Web site, www.cidd.unc.edu, to learn more.

Arjun Deb wins New Scholar Award in Aging

Arjun Deb, MD, an assistant professor in the UNC School of Medicine, has received a 2008 New Scholar Award in Aging from the Ellison Medical Foundation.

Deb's project studies the role of cardiac stem cells in the biology of aging of the adult heart and will determine whether cardiac aging is associated with decreased self-renewal of cardiac stem cells. His lab plans to investigate signaling mechanisms that regulate cardiac stem cell renewal and how this is altered following injury and aging.

The award provides funding of $100,000 per year for a four-year period.

Deb joined the Department of Medicine's cardiology division and the Carolina Cardiovascular Biology Center in 2007.

The foundation's New Scholar awards provide support for newly independent investigators in the first three years after their postdoctoral training, when they are establishing their own labs. These awards support bright young scientists during their early years, allowing them to staff their laboratories, collect preliminary data and organize research programs of sufficient momentum to obtain ongoing support from other sources.

New Scholar applications are solicited by invitation only. Candidates are investigators who are nominated by their institutions for their outstanding promise in basic aging research.

The Ellison Medical Foundation is a non-profit organization that supports basic biomedical research on aging relevant to understanding lifespan development processes and age-related diseases and disabilities. The Foundation aims particularly to stimulate new, creative research that might not be funded by traditional sources or that is often under-funded in the US.

More information about foundation's New Scholar award program and other funding activities is available at http://www.ellisonfoundation.org/index.jsp.

Lineberger scientist receives first Battle Research Award

Yi Zhang, PhD, professor of biochemistry and biophysics in the UNC School of Medicine, has been awarded the first Hyman L. Battle Distinguished Cancer Research Award in recognition of his work.

The award, established last year by the Battle Foundation of Rocky Mount, recognizes exceptional cancer research at the medical school and comes with a $25,000 prize. The Battle Award fund is a permanent endowment held by The Medical Foundation of North Carolina, Inc.

Zhang

Zhang, a member of the UNC Lineberger Comprehensive Cancer Center, is an internationally recognized scientist in the area of chromatin, a genetic material. He received the Gertrude Elion Award in 2003 from the American Association of Cancer Research and is a Howard Hughes Medical Institute investigator.

Zhang and his colleagues study how DNA is packaged in different cell types into chromatin. The differences in chromatin affect almost every cellular process from gene expression through the shape and differentiated function of cells and tissues. Chromatin dynamics help explain why nerve cells and skin cells—which have the exact same DNA—differ in shape, size and capabilities. When the enzymes that control chromatin are deranged, cancer can develop.

Zhang's lab has discovered and characterized many of the proteins that regulate chromatin structure. A testament to the high impact of his work came recently from the research information company, Thomson Scientific, which ranked Zhang 7th worldwide in numbers of high impact citations in the area of molecular biology and genetics.

Hyman L. Battle (1896-1972) established the Battle Foundation in 1946. His grandfather, Kemp Plummer Battle, was an early president of UNC-Chapel Hill.

UNC researchers, spin-off receive NIH small business grant

UNC School of Medicine researcher Dr. Jonathan Serody, in collaboration with local research company TheraLogics, has received an $800,000 grant from the National Institutes of Health (NIH) to study the treatment and prevention of graft versus host disease.

Serody

Serody is the Elizabeth Thomas Professor of Medicine, Microbiology and Immunology, and co-leader of the immunology program at the UNC Lineberger Comprehensive Cancer Center.

The two-year NIH Small Business Technology Transfer grant supports cooperative research and development projects between small business concerns and research institutions that have potential for commercialization.

Graft versus host disease, or GVHD, is a common side effect following a bone marrow or cord blood transplant. It occurs when the "new" immune system of a patient who has undergone transplantation for a disease such as cancer attacks its host—the patient's body.

The grant will fund research to evaluate NF-kappa B blockade as a method of preventing or treating GVHD. NF-kappa B is a protein that attaches to DNA inside cell nuclei and turns genes on and off.

TheraLogics, a Chapel Hill-based company spun out of UNC research, investigates the role of NF-kappa B in diseases such as cancer and muscular dystrophy.

Collaborating with Serody are Albert Baldwin, PhD, UNC Lineberger associate director and founder of TheraLogics; Patrick Flood, PhD, associate professor in the UNC School of Dentistry and Theralogics' grants officer; William Zamboni, PhD, associate professor in the UNC School of Pharmacy; along with scientists from the University of Minnesota and the Fred Hutchinson Cancer Research Center in Seattle, Wash.

Researcher awarded Rita Allen Foundation Scholarship

Ian Davis, MD, PhD, assistant professor of pediatrics in the UNC School of Medicine and a member of the UNC Lineberger Comprehensive Cancer Center, has been selected as one of seven national 2008 Rita Allen Foundation Scholars.

The three-year, $150,000 grant will support his research into childhood cancer.

The molecular switches that control which genes are turned on and off are frequently altered in several childhood solid tumors and leukemias. Davis' lab aims to understand how these molecular switches differ from their normal counterparts and hopes to capitalize on these differences to develop new therapies for such cancers.

The Princeton, N.J.-based Rita Allen Foundation established the scholars program to advance medical research. It has supported more than 80 scientists over the past 30 years.

UNC doctor recognized as a "Hero of Emergency Medicine"

The American College of Emergency Physicians has recognized Dr. Judith E. Tintinalli, professor and chair emeritus in the department of emergency medicine at the UNC School of Medicine, as a "Hero of Emergency Medicine."

The honor, announced as part of the college's 40th anniversary celebrations, recognizes emergency physicians who have made significant contributions to emergency medicine, their communities and their patients.

Tintinalli, the emergency department's founding chairman, is also an adjunct professor in the Department of Health Policy and Administration in the UNC School of Public Health, and a guest lecturer in medical journalism in UNC's School of Journalism and Mass Communication.

The college described Tintinalli is one of the world's leading emergency medicine educators and said that her dedication, passion and commitment embody the vision of its founders and the ideals of the specialty.

Tintinalli was elected to the National Academy of Sciences Institute of Medicine in 1997, was president of the American Board of Emergency Medicine from 1989 to 1990, and was the founding president of the Council of Emergency Medicine Residency Directors. She served as deputy editor of the *Annals of Emergency Medicine* from 1994 to 2005 and is editor of *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*, first published in 1978 and now in its sixth edition.

The American College of Emergency Physicians is a national medical specialty society representing emergency medicine with more than 25,000 members.

Carey inducted into Johns Hopkins Society of Scholars

Dr. Lisa Carey, associate professor of medicine in the UNC School of Medicine and medical director of the UNC Breast Center, has been inducted into the Johns Hopkins University Society of Scholars.

Carey, one of 15 new inductees, was honored at a recent ceremony at the Johns Hopkins School of Medicine. She was recognized for her work with UNC colleagues to identify and tailor treatment for molecular subtypes of breast cancer.

Carey

The 521-member society is designed to honor individuals who did their training (in fellowships, postdoctoral training and early faculty positions) at Johns Hopkins and subsequently gained marked distinction elsewhere in their fields of physical, biological, medical, social or engineering sciences or in the humanities.

Carey, a member of the UNC Lineberger Comprehensive Cancer Center, is a medical oncologist dedicated to clinical and translational breast cancer research, which requires a multidisciplinary approach to cancer care to include scientists as well as clinicians.

Carey has authored or co-authored more than 70 manuscripts and book chapters. Currently, she is the principal investigator of a large-scale, multi-institution trial to test new treatments for a basal subtype of breast cancer, and is the principal investigator of a national cooperative group trial

examining targeted therapy for another subtype of breast cancer.

Carey earned her medical degree from Johns Hopkins, was a resident in internal medicine and then a fellow in oncology from 1990 to 1997. She earned an advanced degree in clinical research at the Johns Hopkins School of Public Health in 1998, and joined the UNC faculty in 1998.

Samulski wins achievement award from American Society for Gene Therapy

R. Jude Samulski, PhD, director of the Gene Therapy Center at UNC, has received the inaugural Outstanding Achievement Award given by the American Society for Gene Therapy.

Samulski, a professor in the School of Medicine's pharmacology department and member of the UNC Lineberger Comprehensive Cancer Center, received the award recently at the society's annual meeting in Boston. He was selected from a pool of 13 nominees from across the country.

The award recognizes an active member of the society who has achieved a pioneering research success, a specific high-impact accomplishment or a lifetime of significant scientific contributions to the field of gene therapy.

Samulski's research focuses on the study of the human non-pathogenic parvovirus adeno-associated virus (AAV). He has long pioneered methodologies for using viruses to deliver genes effectively and safely to various targets in the body, including the brain, lungs, heart and muscle. As a graduate student at the University of Florida in the early 1980s, his thesis project was developing AAV as a vector for therapeutic genes.

This work eventually led to development of AAV type-2 as a viral vector, which has been used for gene therapy trials in cystic fibrosis, hemophilia, Parkinson's disease, retinal disorders and in several other settings, including the first clinical trial of gene therapy for muscular dystrophy in the United States. That trial is currently under way, led by a university biotech start-up that Samulski co-founded with Xiao Xiao, PhD, who is now the Fred Eshelman Distinguished Professor of Gene Therapy in the UNC School of Pharmacy molecular pharmaceutics division.

Samulski

Samulski was recruited to UNC as director of the Gene Therapy Center in 1993. In addition to his work at UNC, Samulski has founded the Chapel Hill Project, a non-profit organization focused on facilitating gene therapy clinical trials for orphan diseases. Orphan diseases are life-threatening or chronically debilitating diseases affecting relatively few people. As a result, pharmaceutical companies do not generally invest significant funds toward their research and development and most sufferers lack sufficient treatments.

Sandler named president of American Gastroenterological Association Institute

Dr. Robert S. Sandler, chief of the Division of Gastroenterology and Hepatology in UNC's School of Medicine, began a one-year term in May as president of the American Gastroenterological Association (AGA) Institute.

Sandler is the Nina C. and John T. Sessions Distinguished Professor in the School of Medicine and professor of epidemiology in the UNC School of Public Health. He joined the UNC faculty in 1981 and has been division chief since 2003. He is also the longstanding director of the Center for Gastrointestinal Biology and Disease, an NIH-funded Digestive Disease Research Core Center that is based at UNC and NC State University.

Sandler

As a researcher, Sandler has long been nationally recognized in the field of cancer epidemiology and outcomes research. He was the principal investigator in a widely cited study published in the *New England Journal of Medicine* that found patients who had colorectal cancer might reduce their risk of developing future colorectal adenomas (colorectal cancer precursors) by taking an aspirin daily.

Sandler received his medical degree from Yale University School of Medicine and was an intern and resident in internal medicine at George Washington University Hospital in Washington, DC. After clinical and research fellowships in gastroenterology at UNC, Sandler was an NIH Clinical Cancer fellow at NC Memorial Hospital (now part of UNC Hospitals). He was a trainee in cancer epidemiology, and he earned his MPH in epidemiology from the UNC School of Public Health.

Sandler was honored in 2004 with the Foundation for Digestive Health and Nutrition's Fiterman Foundation Joseph B. Kirsner Clinical Research Award in Gastroenterology. He has dedicated himself to several organizations by serving on committees and review panels, including the AGA Institute, National Institute of Diabetes and Digestive and Kidney Diseases, National Cancer Institute, and the Crohn's and Colitis Foundation of America. For the AGA Institute, he has worked tirelessly for a number of councils, committees, task forces and the Governing Board. Dr. Sandler also has served on five editorial boards, and was an associate editor of *Gastroenterology*, the leading peer-reviewed journal in the field.

The American Gastroenterological Association is the largest and most prestigious professional organization in gastroenterology. Founded in 1897, the association is the oldest medical-specialty society nationwide, and its more than 14,500 members include physicians and scientists who research, diagnose and treat disorders of the gastrointestinal tract and liver.

Evanosky Foundation gift to help families facing rare disease
The Chicago-based Evanosky Foundation has given $10,000 for the treatment of children diagnosed with metachromatic leukodystrophy (MLD) at UNC's Clinical Center for the Study of Development and Learning (CDL).

Dr. Maria Escolar and Bob Evanosky

The John, Christopher and Jack Evanosky MLD Treatment Fund is named after Bob and Sonya Evanosky's three children, all of whom have the disease. Bob is director of the Evanosky Foundation. The fund will be used solely to provide financial assistance to families with children diagnosed with MLD who are seeking care under Dr. Maria Escolar, director of the Neurodevelopmental Function in Rare Disorders Program at the CDL. Funds may be used for travel and lodging expenses, medical evaluations and testing, parking fees and other expenses when all other forms of financial support have been exhausted.

Metachromatic leukodystrophy is a rare, genetic, degenerative, neurometabolic disorder that affects approximately one in 40,000 people (primarily children) worldwide. It is an inherited disease, but parents are typically not affected. At present, it is a disease for which there is no cure. Those affected with MLD are deficient in the arylsulfatase-A enzyme, which is responsible for breaking down fatty substances called sulfatides into harmless chemicals. A person with MLD cannot break down these sulfatides, causing them to accumulate in the body. This accumulation causes the destruction of myelin (demyelination), which is the protective covering on the nerve fibers that enables communication between the nerves and the brain.

California family contributes to Crohn's disease research
Michael and Donna Greenberg, of Atherton, Calif., have made a generous gift of $10,000 to support the research of Scott Plevy, MD, an associate professor of medicine, microbiology and immunology in the UNC School of Medicine. This is the fourth gift the couple has made to support Plevy's research.

The Greenburg's young daughter was diagnosed with Crohn's disease nearly 20 years ago, and the family sought Plevy's help when he was on a fellowship at Cedars-Sinai Medical Center in Los Angeles. Plevy and his colleagues were able to return the Greenburg's daughter to a relatively normal life.

"Just as importantly, he offered a humanity that is hard to find in the halls of world-class medical treatment," said Greenburg. "At times of crisis, we have found ourselves seeking his help even though it meant traveling across the country."

"It is our desire to help, in our small way, Scott further his research so that other desperate families can be similarly helped," said Michael. "Making a direct contribution to a working researcher who we believe deeply in provides us with a feeling of participation in the effort."

Plevy has contributed significantly to the medical literature on Crohn's disease and ulcerative colitis. He is the author of numerous original articles, abstracts, and book chapters. His work has appeared in the *Journal of Experimental Medicine*, *Journal of Biological Chemistry*, *Immunity*, *Science*, *Molecular and Cellular Biology*, *Gastroenterology*, and *The Journal of Immunology*. Plevy has served as basic science section editor for *Inflammatory Bowel Diseases* and is a reviewer for numerous scientific and clinical journals.

Lucas professorships in biomedical engineering created
Janie M. Fouke, of Gainesville, Fla., has signed a letter of intent to establish the Carol N. Lucas Professorship in Biomedical Engineering.

Fouke has set aside $333,000 in her estate plan to honor Lucas, her mentor. Separately, Lucas is creating the Lucas Family Professorship in Biomedical Engineering, through a gift of life insurance, in honor of several of her immediate family members who have received academic degrees from UNC.

Janie Fouke and Carol Lucas

Fouke, senior advisor to the president for international affairs at the University of Florida, earned graduate degrees in biomedical mathematics and engineering from UNC. She served as dean of the College of Engineering at Michigan State University from 1999 to 2005. Prior to that, she was the inaugural division director of the newly created Division of Bioengineering and Environmental Systems with the National Science Foundation in Washington, DC. From 2005 to 2008, Fouke was provost and senior vice president for academic affairs at the University of Florida.

Lucas, of Chapel Hill, NC, is a professor emerita of biomedical engineering, surgery, and applied and materials sciences in the Department of Biomedical Engineering at UNC. She retired in 2007 after more than 30 years on the faculty

40s

Ira A. Abrahamson, Jr., CMED '46, was recently honored with a Distinguished Alumni Award by the University of Cincinnati College of Medicine. Abrahamson founded the Abrahamson Pediatric Eye Institute at Cincinnati Children's Hospital Medical Center in 1995. In addition to many other well-deserved awards and recognitions, Abrahamson also holds a Distinguished Alumnus Award from UNC, as well as a University of Toledo Medical Mission Hall of Fame Award, which he received in 2007.

50s

Daniel A. Martin, CMED '50, medical director of the Hopkins County (KY) Health Department and a board member of the Trover Health System in Madisonville, retired as director of the Trover Health System's education division three years ago. While at that post, he developed: a program for full-time third- and fourth-year students (at the Univ. of Louisville), the first family practice residency in the state, the state's only CRNA program, and an allied health campus for Madisonville Commuity College. He is now working on a smoking ban for his entire county through the health department.

60s

Charles E. Fitzgerald, Jr, MD '60, and his wife, Dana, moved to Farmville in spring 2007 "to escape the Florida tourists and hurricanes." Although they left three families of children and 10 grandchildren behind, they have a married son and two grandchildren in Chapel Hill. The latter gives them reason to visit "ol' Chapel College" regularly. Fitzgerald's current professional interest is promoting patient advocacy through faith-based organizations. He says, "These organizations are an untapped resource to assist patients through the healthcare maze. I'd love to hear from any other alumni with similar interests."

James Rose, MD '64, of Madison, Wisc., welcomed his fourth grandchild, Adam Broder Rose, into the world on June 14, 2008.

70s

Dwight L. Evans, MD (Housestaff '76-'79), Ruth Meltzer Professor and chairman of the Department of Psychiatry, professor of psychiatry, medicine, and neuroscience at the University of Pennsylvania School of Medicine, is the new president-elect of the American College of Psychiatrists. He also recently completed a three-year term as president of the American Foundation for Suicide Prevention. In addition, he is the recipient of the American Psychiatric Association AACDP (American Association of Chairmen of Departments of Psychiatry) Research Mentorship Award, which was presented last May at the American Psychiatric Association Annual Meeting in Washington, DC.

Paul Woodard, MD '79, was recently inducted into the Order of the Long Leaf Pine by North Carolina Governor Michael Easley. Woodard was recognized for his service to the community by the award, the highest civilian honor given by the governor. Woodard helped establish the Raleigh School of Nurse Anesthesia, where he has served as medical director and board president for the past 18 years. Woodard, an anesthesiologist at WakeMed Hospital in Raleigh, also serves as president of Critical Health Systems at the Wake Practice Center.

80s

Charles S. Stinson, MD '83, medical director for Forsyth Medical Center's Palliative Care Services and a major advocate of the Hospice & Palliative Care Center, has been awarded the prestigious End of Life Care Leadership Award for his innovative and significant contributions to improving end of life care. The award is given annually by the Carolinas Center for Hospice & End of Life Care, an association which represents more than 100 hospice providers in North and South Carolina.

90s

Scott Keenan Garrison, MD '92, and Suzanne McDowell Garrison are delighted to announce the birth of a baby boy, Keenan Secrest Garrison. He was born on May 17, 2007, and weighed 8 lbs., 4 oz. Big sister Bailey is also thrilled with her new little brother.

Alexander M. Wilgus, MD '93, director of patient care for the Lynchburg Family Medicine Residency Program, has been selected to participate in the 2008-2009 class of the Medical Society of Virginia Foundation's Claude Moore Physician Leadership Institute. Now entering its third year, the Institute helps physicians strengthen their leadership abilities and gain the skills necessary to improve health care in Virginia. Twenty physicians have been chosen for the program. Wilgus also volunteers at the Free Clinic of Central Virginia and has agreed to serve on the Lynchburg Academy of Medicine Board of Directors starting in September 2008. He is married, has four children, and is a former foster parent.

00s

Rich Vinroot, Jr, MD '04, has accepted a position as a physician with Doctors Without Borders/Médecins Sans Frontières. He is currently the clinical supervisor of a tuberculosis prevention and treatment program in the Mathare Slum, Nairobi, Kenya, East Africa. On completion of this mission, he will return to New Orleans, where he will work as an emergency medicine physician.

Eric Chen, MD '07, recently completed his intern year and was named chief resident for his class. He plans on pursuing an OB fellowship immediately after completing his residency. His wife, Lauren, is an attorney in the newly-formed public defender's office that serves Henderson, Polk, and Transylvania counties.

In Memoriam

Anna Louise Williams, MD '80, 54, diagnostic radiologist, died March 2, 2008 of a pulmonary embolism at her home in Washington, DC. Williams was born in Durham, NC, and grew up in the home of an older sister, Lauriette W. West-Hoff, and her sister's husband, David West.

She received her undergraduate ('76) and medical ('80) degrees from UNC and completed her residency in radiology in New Orleans. Williams moved to Washington in 1984 after receiving a postdoctoral fellowship from Georgetown University Hospital. She joined Washington Radiology Associates, where she worked until 1996.

She also served as staff radiologist at the Columbia Hospital for Women and Washington Hospital Center. At the time of her death, she was a staff radiologist for Kaiser Permanente's West End Medical Center in the District. One of her medical concentrations was helping minority women receive mammograms.

Williams was a member of the Radiological Society of North America, the American Institute of Ultrasound in Medicine and the DC Metropolitan Radiological Society. She attended Trinity Episcopal Church in Washington and enjoyed jazz, travel, and spending time with friends.

Survivors include her husband of 25 years, Wayne B. McLurkin of Washington; four sisters, and two brothers.

William Henry White, Jr., MD '61, passed away on Thursday, March 20, 2008, at NC Memorial Hospital, surrounded by family.

After receiving a bachelor of science degree in medicine from UNC in 1958, he graduated from the UNC School of Medicine in 1961. Following a one-year internship at the Medical College of South Carolina in Charleston, he returned to Chapel Hill for a four-year residency in obstetrics and gynecology. White served in the US Air Force at Andrews Air Force Base for two years, and practiced obstetrics and gynecology in Wilmington for one year. In 1969, White opened a OB-GYN practice in his hometown of Sanford. During his career of almost 38 years, he delivered more than 6,000 babies.

White was an active member of the Lee County Medical Society and recently retired as an OB-GYN physician at Central Carolina Hospital, where he was chief of staff twice. White was a member of the UNC Alumni Association and served as the Lee County representative to the UNC Rams Club Executive Committee for several terms. White's professional organizations include: The Robert A. Ross Society, serving as president for one term; NC OB-GYN Society serving as arrangements chairman for several years; the Southern OB-GYN Society; and a board-certified member of the American College of OB-GYN.

He was preceded in death by his sister, Margaret Ann White Rankin. He is survived by his beloved wife of 47 years, Faye Mewborn White, a nursing student whom he met in 1955 at UNC; their three daughters, Sarah, Kathy, and Elizabeth; seven grandchildren and many nieces and nephews. White served St. Luke United Methodist Church as a member of the administrative board, Staff Parish Relations Committee, Board of Trustees, Methodist Men, and the Moffitt Sunday School Class.

Bertram Watts Coffer, MD '69, 66, died April 10, 2008, at Rex Hospital in Raleigh, NC. A native of Sanford, he spent the last 33 years of his career at Rex Hospital. He graduated from North Carolina State University in 1964 and the UNC School of Medicine in 1969. He completed a surgical residency at Duke in 1971, as well as an anesthesia residency at UNC in 1975.

During the Vietnam War, he was commissioned as a lieutenant commander and was stationed at Jacksonville (Fla.) Naval Air Station as an anesthesiologist. In 1974, he worked with Project Hope at the University of the West Indies in Jamaica. He began practicing in 1975 when he joined Raleigh Anesthesia Associates, which he eventually incorporated and developed into Critical Health Systems. He served as CEO there from 1975 to 1996. Coffer had a vision for the advancement of anesthesiology into new areas, such as intensive care, critical care, pain management, and total patient care. He was a member of numerous boards, including the Rex Hospital Executive Committee and the Ravenscroft Board of Directors. He was also president of the Wake County Medical Society in 1986. He had an active role in politics and public policy. Many elected officials, including US senators and members of Congress, often sought his advice.

Coffer is survived by his wife of 42 years, Jeanne Coffer; two daughters, Dr Natalie Coffer and Holly Coffer Fuller, one son, Bertram Coffer Jr.; two sisters, Marilyn Lambe and Helen Gupton; one brother, Newlin Coffer; and three grandchildren. He was predeceased by a sister, Carol Thompson.

Charles Ivey Loftin III, MD '63, 70, of Roanoke, died Thursday, April 24, 2008, after a courageous three-year battle with cancer. He retired last November following 37 years of practice with Internal Medicine Associates. He was a graduate of Davidson College and the UNC School of Medicine.

Loftin completed a general medicine internship at the Medical College of Georgia, followed by two years of service as a captain in the US Air Force medical corps. He completed an internal medicine residency at the Bowman Gray School of Medicine.

He was a member of the Roanoke Valley Medical Society, the Medical Society of Virginia, and the American Society of Internal Medicine. He was a member of Second Presbyterian Church where he served as deacon, elder, youth leader, Sunday School teacher and member of the Chancel Choir. He also sang with the Roanoke Valley Choral Society, the St. John's choir and the Opera Roanoke Chorus. He was a past president of the Arthritis Foundation and a founding board member of the Pastoral Counseling Center. He also served on the board of Opera Roanoke.

He is survived by his wife of 46 years, Alice, his daughter Catherine, son Christopher; and four grandchildren. He is also survived by two brothers, David and Bruce.

Christopher C. Fordham III, MD

November 28, 1926 – August 14, 2008

Christopher Columbus Fordham III, MD, former dean of the School of Medicine and chancellor emeritus of UNC-Chapel Hill who led Carolina during a span of major success in the 1980s, died August 14, 2008 at UNC Hospitals. A longtime Chapel Hill resident, he was 81.

"Our hearts and prayers go out to the Fordham family and their friends," said Chancellor Holden Thorp. "Chancellor Fordham was one of this University's greatest leaders.

"As a graduating senior, I couldn't appreciate the challenges he faced as chancellor," Thorp said. "Today, I know that for him it was a labor of love, and that we all are so fortunate to continue benefitting from his wisdom and decisive action. Chancellor Fordham is rightly regarded as the driving force behind a period of extraordinary success at Carolina. We will never forget his deep love for this place."

As chancellor from 1980 to 1988, Fordham oversaw a major revision of the undergraduate curriculum and led the push to significantly boost faculty research funding, which grew from $56 million to $105 million. Under his leadership, the state increased the University's budget. He renewed the focus on private fundraising, putting Carolina among the nation's top 20 public institutions for contributions and increasing the endowment from $30 million to $130 million.

A native of Greensboro, Fordham devoted five decades of service to the University, including his tenure as chancellor. Fordham began as a UNC undergraduate before earning a pre-medical degree as well as a certificate in medicine in 1949. He received a medical degree from Harvard University in 1951.

After an internship at Georgetown University Hospital and a residency at Boston City Hospital, Fordham returned to Carolina as a senior assistant resident in medicine and a fellow at the new four-year medical school. After two years as a medical officer in the US Air Force, he started a private practice in Greensboro. He came back to Chapel Hill as an instructor, professor and associate dean in the medical school. The Medical College of Georgia recruited him in 1969 to become vice president for medicine and dean. Fordham returned to Carolina in 1971, becoming dean of the School of Medicine and a professor in the school until 1979.

Under his leadership as dean, the NC Area Health Education Centers (AHEC) Program was established, linking the University with other in-state medical schools to provide service opportunities to physicians and increase the ratio of health professionals to North Carolina's population. Today, AHEC remains headquartered at the School of Medicine and is considered a successful national model.

During part of Fordham's tenure as dean, he also served the University as vice chancellor for health affairs. In 1977 he was named acting assistant secretary for health and acting Surgeon General of the United States at the request of President Jimmy Carter.

UNC President William C. Friday hired Fordham to succeed Chancellor N. Ferebee Taylor, who took office in 1972. Fordham is the only medical doctor to serve as the University's chancellor.

Fordham's honors include induction as a fellow of the American Association for the Advancement of Science, the American Medical Association Award and the NC Hospital Association's Distinguished Service Award. In 2002, Fordham received the William Richardson Davie Award, the highest honor bestowed by the University's Board of Trustees, for his dedication, commitment, loyalty and service. The University also presented him with its Distinguished Alumnus Award, given for outstanding contributions to humankind.

Christopher and Barbara Fordham established the Fordham Fund for Diversity in the Health Professions through the Medical Foundation of North Carolina, Inc., the private fundraising arm supporting the School of Medicine. In 1988, the University's biotechnology building was named Christopher C. Fordham Hall. The Christopher Fordham Award recognizes a graduating student for outstanding and creative leadership at the School of Medicine. He also received the General Alumni Association's Distinguished Service Medal and was selected for membership in the Order of the Golden Fleece, a campus honorary society. The US 15-501 Bypass in Chapel Hill is named Fordham Boulevard in his honor.

Fordham is survived by his wife, Barbara, of Chapel Hill and a Carolina alumna; and three daughters: Pam Fordham Richey of Durham, Susan Fordham Crowell and husband James Crowell of Myersville, Md.; and Betsy Fordham Templeton and husband Michael Maloney of Durham, as well as six grandchildren and seven great-grandchildren.

In lieu of flowers, the family requests that donations be made to the Orange United Methodist Church Building Fund, 1220 Martin Luther King Blvd., Chapel Hill, NC 27514; the Fordham Fund for Diversity in the Health Professions, Medical Foundation of North Carolina Inc., 880 Martin Luther King Jr. Blvd., Chapel Hill, NC 27514; or the National Multiple Sclerosis Society, PO Box 4527, New York, NY, 10163.

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A Bit of Salt, A Trace of Life

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probably also withstand radiation levels like those on Mars better than other macromolecules would. Scientists already suspect that Mars and other planets have evaporites—mineral sediments created when surface water evaporates. Griffith says that scientists should explore halite in these evaporites.

"Who knows?" he says. "Cellulose might just be the electron microscoper's version of little green men."

Griffith used a stipend from his Kenan Distinguished Chair award to fund this research. He is now seeking a grant from the National Science Foundation to research older salt deposits around the world; there's a 400-million-year-old halite formation thousands of feet below Detroit.

This article originally appeared in the Spring 2008 issue of Endeavors *magazine. Used with permission from* Endeavors.

CORRECTIONS

In the Spring 2008 issue of the *Bulletin*, Dr. Leigh Callahan was incorrectly identified as the current associate director of UNC's Thurston Arthritis Research Center in the story titled "Trialed and True" (p.4). Callahan served in that capacity from 1995 until 2000.

Also in the Spring 2008 issue, Harriet Farb's age at the time of her initial cancer diagnosis was incorrectly reported in the story titled "Climbing for Cancer" (p. 14). She was 47 at the time

Paso a Paso

Continued from page 14

service to patients in Spanish with proper supervision."

With the inauguration of the UNC Institute of Global Health and Infectious Diseases under the direction of Dr. Myron Cohen, and the launch of the SOM office to organize global rotations, it is anticipated that the School of Medicine will deepen and broaden its efforts in Latin America. These global health partnerships, particularly in the teaching function, directly benefit the population of North Carolina.

"There is a natural synergy between our global health collaborations in Latin America and what we are trying to do for our Latino population here," Morgan says.

Paso a Paso

CELAH, with the CAMPOS program, is expected to help catalyze efforts in the health system in the clinical care of the state's Hispanic-Latino population, while providing an infrastructure for research and teaching. The Center of Excellence design attempts to move beyond an 'interpreter model' for the provision of care. It is a reasonable model for health systems in transition, such as in the southeast, wherein there has been a significant change in the Spanish-speaking population. Certainly, a goal is to help position UNC as a national leader in Latino health.

We are all mutants

Health care delivery in the age of genetic medicine

By James P. Evans, MD, PhD

Occasionally, the emergence of new technology or knowledge propels medicine across a threshold so monumental that it mandates changes in the structure of health care delivery. In the 20th century, a deep understanding of infectious diseases and of cardiovascular risk factors triggered such changes, stimulating action at the governmental and population levels with the creation of organizations like the Centers for Disease Control and Prevention (CDC) and departments of public health.

Today, medical science is at another such threshold with the advent of "individualized medicine." Driven by advances in genomics, emerging insight into each individual's unique susceptibility to disease promises to transform patient care. However, such advances will also compel a fundamental restructuring of the way medical care is delivered in the US.

There are many reasons to pursue a rational, just and workable system of health care in the US. Millions of Americans live without health insurance; and even for those with insurance, the cost of medical care is a constant threat to financial security. The potential success of genomic medicine provides a series of additional compelling arguments to embrace a system of care that provides universal coverage and broadly pools risk. It is no small irony that the emergence of individualized medicine ultimately mandates a shared approach to its delivery.

Genomic undermining of health insurance

Modern health insurance is based on the tenet that it is possible to accurately predict aggregate risk but much more difficult to predict individual risk. Insurance actuaries can reliably estimate the percentage of a population that will develop breast cancer, but since we cannot predict precisely which individuals will develop it, resources are pooled, enrollees pay similar premiums, and all benefit. However, the rise of individualized medicine undermines this traditional system. By learning to identify an individual's risk, that individual becomes less attractive to insure for the very maladies for which they require coverage. The recently-passed Genetic Information Non-Discrimination Act will help limit genetic cherry-picking by insurers. However, in a fragmented health care system, such fixes ultimately run the risk of simply shifting the inequity by enabling individuals to select coverage based on their own specific risks. Either way, the foundation of the system is fatally undermined. The only solution is for all to pool their risks.

Individualized medicine and prevention

One of the promises of individualized medicine is the possibility of engaging in a level of preventive care that far exceeds current abilities. Screening programs are, by their very nature, inefficient, since an entire population is subjected to screening while relatively few individuals benefit and some are actually harmed. This inherent inefficiency is expensive for both the individual (in terms of suffering) and for society (in terms of cost).

Genomic medicine promises more efficient tailoring of screening programs—which would save time and money and reduce morbidity for the population as a whole. However, the current health care delivery system is poorly equipped to incentivize prevention. Most US citizens who have medical insurance stay with a given carrier for an average of less than 6 years. Thus, since individual insurers are unlikely to be paying for an enrollee 10 or 20 years hence, they have little motive to engage in long-term preventive care. A system of universal coverage with broadly shared risk is the only way to reap the benefits of individualized medicine at the population level.

We are all mutants

The rise of individualized medicine will amplify

inequities of birth so that those born with disease-predisposing mutations will bear the brunt of increased costs, whereas those without such predispositions can seek less expensive care. An individual's attitude might be: "Tough, I'll take my savings and run." Setting aside the ethical implications of such an attitude, it is flawed by one of modern genetics most piercing insights: we are all mutants.

Each individual carries (eventually identifiable) genomic risks for something. With our growing ability to analyze your genome, all will likely discover that their risk for some future malady is increased; i.e., we all have pre-existing conditions. This inevitable bad news for individuals is actually good news for the common lot and represents a compelling inducement to share risk: because all of us are flawed at the level of the genome, we need one another.

The rise of pharmacogenomics

Pharmacogenomics offers the potential to use genetic profiling to individualize our choice of drugs and their optimal doses, thereby saving lives and money. But successful application of pharmacogenomics will inevitably fragment markets for pharmaceuticals. Under the present balkanized system of health care financing, such a situation will burden patients, insurers and the pharmaceutical industry with challenges that will increase in direct proportion to this new field's success. Since each individual's insurance plan cannot be expected to have the broad formularies necessary to reap the practical benefits of pharmacogenomics, patients will often be insured by plans that lack a drug that could result in significantly improved care. This situation is undesirable from the perspective of the patient and insurer alike and argues strongly for pooling both risk and resources so patients have access to an increasingly individualized formulary while insurers are spared endless petitions by patients for off-formulary drugs.

Irrational rationing

The fear that the US will end up rationing medical care is commonly expressed. However, healthcare in the US is already rationed, but in an irrational and unjust manner based on circumstances of birth and income. The rise of individualized medicine could make matters worse. Despite hopes to the contrary, genetically-based medicine may actually increase health care costs, in part by identifying risks which require clinical intervention, usually in the form of high-tech surveillance. Such a situation will only add to widespread demands for universal coverage as more individuals seek to mitigate their genetically identified risks. On the other hand, individualized medicine has the potential to reduce the aggregate cost of health care through better prevention. But if such cost savings materialize, they will be primarily population-based and thus most readily realized within a non-fragmented health care system. Thus, whether individualized medicine results in cost savings or not, either way it will provide potent stimuli for universal care and shared risk.

A genetic underclass

Embracing individualized medicine within our current system threatens to create a genetically defined underclass which has inherited excess risk and thus is unable to afford adequate care. This new genetically defined underclass will transcend all social strata and, except for those few with truly exceptional resources, the cost of medical care will be beyond reach. To prevent a blossoming of irrational rationing and the emergence of a biologically defined group precluded from obtaining proper care, it will be necessary to share our risks and resources so that regardless of genetic makeup, a basic level of medical care will be available to all.

> Because all of us are flawed at the level of the genome, we need one another.

A moral imperative

While universal healthcare will hardly be a panacea for all the complex problems that plague health care delivery in the US, there are compelling practical reasons to pursue it. The rise of individualized medicine forcefully adds to this imperative. But our burgeoning genetic knowledge also has a profound moral dimension. The science of medical genetics starkly illuminates our common lot, revealing in the most vivid way possible that we are all flawed and that we are all in the same boat. We must insist that the boat we share be a just one to which all have access.

Evans is an associate professor in the Department of Genetics at the UNC School of Medicine.

Spring Medical Alumni Weekend

April 24-25, 2009 - Chapel Hill, N.C.

Classes from years ending in "4" and "9" will celebrate reunions, however all alumni are encouraged to attend the events.

1949 1954 1959
1964 1969 1974
1979 1984 1989
1994 1999

For more information, visit http://www.med.unc.edu/alumni or call (919) 962-8891. Please make sure that you make your hotel reservations early, as area hotels will fill up quickly as the date approaches.

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